Indian and Northern Affairs Canada

CANADA'S NORTH:

The Reference Manual

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Preface

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To maintain this reference as a topical, timely and accurate source of information on the north, amendments and additions will be issued periodically by Indian and Northern Affairs Canada and will be available on a standing order basis (see preceding order form).

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1.0 Introduction

The Northern Reference Manual attempts to do what is probably an impossible job — to provide answers to the most often asked questions about that vast expanse of Canada, Yukon and the Northwest Territories.

The subject matter is addressed under various headings as shown in the Table of Contents. For the most part it was written by people with an intimate knowledge of their subject and a long acquaintance with Canada north of 60°N. Many topics might have been discussed and were not, or could have been covered in more detail; limitations of space require a less than complete treatment of the subject.

It is the hope of Indian and Northern Affairs Canada (INAC) that the manual will be informative to any who have more than a passing interest in this land and its resources, its people and their history, and the ways in which each has shaped the other. We have tried to include references where a more complete treatment of a particular topic can be found and we would welcome suggestions for additions or changes, which will be incorporated as updates are issued from time to time.

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2.0 The Physical Environment

2.1 Introduction

Yukon and the Northwest Territories make up about one-third of the total area of Canada, covering 482,515 km^2 in Yukon and 2,005,500 km^2 in the NWT. A diverse range of biological and physical environments and climatic conditions characterize these vast areas, where the scenery is probably the most distinctive in all of Canada. In winter, the environment can be one of the harshest and most inhospitable to man, characterized by intense cold, extended periods of darkness and much less precipitation than most desert regions of the world. Knowledge about the geographical locations of Yukon and the NWT is crucial to an understanding of these conditions. Lying north of latitude 60°N, they receive less direct sunlight and, hence, less surface warming than areas in more southerly latitudes because of the oblique angle of the sun's rays.

Northern regions are commonly classified as being either arctic or subarctic in nature. The tree-line is probably the most conspicuous feature characterizing the boundary between the two. In Canada, the tree-line extends from the northern Yukon diagonally south and eastward to Churchill, Manitoba, then follows the southern coast of Hudson Bay to Great Whale River, Quebec, and then runs eastward to Ungava Bay and the Labrador Coast. In general, the ground is perennially frozen north of the tree-line, and vegetation is characterized by tundra species and low-growing shrubs. The scenery varies from undulating lowlands in central Keewatin to spectacular, ice-covered mountains with deep fiords on the Baffin Island Coast and arid, desert-like landscapes on the far northern islands such as Ellef Ringnes and Amund Ringnes. South of the tree-line the northern boreal forest extends throughout the lowlands of the Mackenzie Valley, while in the higher elevations of Yukon and of the Mackenzie Mountains in the NWT the boreal forest merges with open woodland and forest-tundra. Alpine tundra conditions occur in some of the highest elevations.

The Arctic Islands are worthy of special recognition since other northern polar countries do not possess such extensive ice-free areas extending so far north. The Arctic Islands constitute a northern archipelago which reaches to 83°N. Some of the islands are of considerable size (e.g. Baffin, Victoria, Banks and Ellesmere islands). The area experiences some of the harshest climatic conditions in Canada.

The High Arctic is an integral part of northern Canada, even though it is remote, sparsely populated and separated by straits and channels such as the north-west passage, which are ice-covered for most of the year.

2.2 The Climate

2.2.1 General

Arctic, boreal and montane climates characterize all of the NWT and Yukon, where it can be extremely cold. Mean annual temperatures are usually near or below freezing and winter temperatures are frequently below -30°C. The arctic climatic zone refers to all areas north of the tree-line, while the boreal climatic zone refers to those areas south of the tree-line. Basic climatological data for a number of localities are given in Table 2-1.

Because of the northerly latitudes there is a lack of incoming solar radiation during fall and winter, and even of daylight north of the Arctic Circle for parts of the winter (Figure 2-1). As a consequence, lowest temperatures occur in February and March in the far north and in January further south; by reflecting solar radiation, the snow cover impedes the rise of temperature in the spring.

The climate in Canada's north is influenced by the year-round presence of ice in Greenland and in the Arctic Ocean and low, incoming radiation which influences the atmosphere "creating" arctic air masses. While arctic regions usually experience these air masses at all times of the year, the boreal regions tend to be affected by these air masses only in the winter and spring. In summer and fall these cold air masses are replaced by westerly, relatively warm, air currents coming from the Pacific Ocean. The latter accelerate the thaw period in the interior of Yukon and in the Mackenzie Valley and favour high summer temperatures, often exceeding 25°C in parts of these regions.

2.2.2 Temperature

Mean daily temperatures for January and July (Figure 2-2) illustrate the variability of temperatures in northern Canada.

In the NWT, summer temperatures of the warmest months average 12.5°C in the northern boreal forest, 8 to 12°C north of the tree-line and 3 to 8°C in the Arctic Islands. Topographic effects are unimportant there, in contrast to Yukon, for example. Winters are cold and long, with temperatures in February averaging between -15°C and -30°C. The growing season for native vegetation but not crops may be as much as four to five months in the boreal forest, three to four months north of the tree-line [illegible] less than two months in the Arctic Islands. The frost-free period in the Mackenzie Valley varies from 50 to 100 days, while north of the tree-line an average of between 40 and 60 frost-free days is more typical.

In Yukon, the frost-free period is short and variable, depending largely on altitude and other local site conditions. The longest frost-free periods recorded were at Dawson (92 days), Whitehorse (87 days) and Watson Lake (85 days). Frost-free periods are shorter for Yukon north of Dawson and for areas at higher elevations than 650 m above sea level. For example, Mayo has a frost-free period of 66 days, while Inuvik, NWT, is frost-free for only 45 days.

The mountainous terrain of Yukon and its relative proximity to the warm Pacific air masses result in marked variations in weather patterns. In summer, sheltered valleys heat up and the highest temperature on record is 35°C, at both Dawson and Mayo. In winter, arctic air masses often remain stationary over the interior of Yukon; temperature inversions can develop in the valleys and extremely low temperatures result. The settlement of Snag holds the record minimum temperature for the entire North American continent, at -63°C. These inversions may exist for several weeks, only to be followed quickly by relatively warm temperatures as the air masses change.

2.2.3 Precipitation

There are relatively few cyclonic storms in the Arctic regions north of the tree-line, and thunder and lightning are rare. Precipitation is low, with between 50 per cent and 70 per cent falling as snow. Total precipitation, including snowfall equivalent, averages only 100 to 150 mm in the Arctic Islands, but increases to 250 to 300 mm at the tree-line.

Much of the polar desert is swept bare of snow during the winter months by wind which deposits snow in gullies and on lee slopes, thus concentrating snowmelt in the spring.

South of the tree-line, not only are snow depths and precipitation amounts considerably greater, but the presence of trees and taller shrubs acts to trap the snow.

Most precipitation falls either in the fall or early spring. Average snow depths of 50 cm or more are not uncommon in the southern Mackenzie Valley and Yukon, although local site conditions are clearly important in determining actual amounts.

2.2.4 Climate and man

Nowhere in Canada are people more conscious of the dictates of climate than in the North. The nature of building construction, work schedules, leisure activities and transportation patterns are largely determined by climatic conditions. Strong winds and low temperatures, especially when combined with the absence of trees on the tundra, can produce severe, sometimes dangerous winter conditions for man.

It is not uncommon, in parts of Keewatin and the Arctic Islands, for example, for air temperatures to fall below -40°C, with winds above 30 km/h. In January, 1935 Chesterfield Inlet recorded a mean daily temperature of -43°C and a mean wind speed of 16 km/h for the entire month. A "wind-chill" factor, based on the cooling power of the wind upon naked flesh, is widely used in Canada. It is often convenient to think in terms of an equivalent temperature which represents the temperature still air would have in order to give the same wind-chill factor as the actual air temperature with a wind of given speed (Figure 2-3).

Other climatic hazards include the occurrence of "blizzard" conditions. These exist when snow or blowing snow, winds greater than 40 km/h, visibility less than 0.8 km and temperatures below -12°C are present at the same time. On such occasions, most outdoor activities are severely curtailed. Even by itself blowing snow is a major problem, occurring, for example, almost one quarter of the time in midwinter in Keewatin. Fog is another problem, especially in late summer in the Arctic Islands, where there is an abundance of water vapour at very low elevation; aircraft movements are often hampered by such conditions. In mid-winter, in some of the larger settlements such as Inuvik, ice fog is a common characteristic brought about by the freezing of warm, moist air from buildings and vehicle exhaust fumes.

2.3 The Water

2.3.1 General

The Arctic Ocean, Hudson Bay, Foxe Basin, Baffin Bay and the various straits and channels between the Arctic Islands constitute large, often deep, water bodies. These are frozen for much and sometimes all of the year, forming pack ice several metres thick.

Of these, the Arctic Ocean is the largest water body. Most of its surface area is permanently frozen and the pack ice moves slowly in a clockwise direction. Open water develops only in late summer off the west coast of Banks Island and in the Beaufort Sea. M'Clure Strait, the western end of the North-West Passage, and the channels separating the more northerly of the Arctic Islands remain clogged with large semi-permanent ice floes. In the absence of icebreaking vessels, marine navigation in the Arctic Islands is largely confined to waters south and east of Barrow Strait and restricted to a six to eight week period in August and September. A slightly more extended shipping season exists in the Beaufort Sea and Amundsen Gulf areas of the western Arctic. Further south, Hudson Bay freezes completely by the end of December and does not begin to clear until June.

The marine areas of northern Canada possess a totally arctic climate. The summers are cool, with July temperatures usually less than 6°C; fog, mist and clouds are common. Water temperatures are always near or just above freezing. They have a pronounced influence upon the climate of the adjacent land by cooling temperatures and spreading extensive cloud in summer. In winter, the frozen waters, especially the Arctic Ocean, serve as uniform "source areas" for the generation of exceptionally cold arctic air masses.

2.3.2 Sea ice

The ice found in the arctic waters of northern Canada can be divided into two categories: ice of land origin, which includes icebergs, and sea ice.

Icebergs, which are seen frequently in Baffin Bay, result from the break-up and disintegration of glaciers when they reach the sea, a process known as "calving." These glaciers originate from the Greenland and Ellesmere Island ice sheets. If icebergs drift toward the North Atlantic they pose a threat to shipping. Ice islands are large individual pieces of tabular ice, often 10 to 60 m thick, which circulate in the central Arctic Ocean; these originate from the ice shelves off the northern coast of Ellesmere Island. In 1962-63, for example, the Ward Hunt Ice Shelf lost 675 km^2 by the breaking-off of five large ice islands.

Sea ice originates from the freezing of sea water. Its distribution and thickness are characterized by extreme short- and long-term variability. The maximum limits of the polar pack ice are indicated in Figure 2-6. Sea ice develops in stages; for example, currently-forming new or young ice is less than 30 cm thick while first year ice is between 30 and 200 cm thick. Multi-year ice, representing ice floes which have persisted for more than one year, may exceed 200 cm in thickness. Coastal narrows and passages which occur in the path of current, tidal or wind-induced moving ice, significantly affect sea ice distribution.

Polynyas, or areas of recurring open water, are "centres of sea ice removal". One of the largest and best known is the "North Water", which occupies an area of several thousand square kilometres each midwinter in northwestern Baffin Bay. Such areas were important for early prehistoric settlement patterns and, more recently, for whaling. Sea ice moves in response to currents, tides and winds, and tensions and pressures may develop within the ice. Areas of open water develop where ice moves apart while pressure ridges, consisting of broken ice several tens of metres high, may form when large ice masses converge.

2.4 The Land

2.4.1 Physiographic regions

Northern Canada may be divided into five major geologically controlled physiographic regions, each of which may be further subdivided (Figure 2-4). The most extensive is the Canadian Shield, which occupies much of the mainland of the NWT, most of the central and eastern Arctic Islands south of Parry Channel, and sectors of Devon and Ellesmere islands farther north. Igneous and metamorphic rocks, formed by intense heat and/or pressure, are widespread. The terrain is rocky and hilly, with numerous lakes. Structurally, the Shield consists of a series of broad arches and basins which once formed varied relief, but which have now been eroded to a more nearly level surface. In a few places, sedimentary rocks are preserved within broad shallow basins, such as Hudson Bay and Foxe Basin. For the most part, however, the Canadian Shield has eroded to a peneplane surface of great geological age and tectonic stability.

The Queen Elizabeth Islands form the Innuitian Province. Here, the sedimentary rocks are gently dipping or folded. Faulting has led to the formation of the various island groups. The broad through channel — the North-West Passage — known in its various parts as M'Clure Strait, Viscount Melville Sound, Barrow Strait and Lancaster Sound, lies along a major structural line. Many of the smaller channels between the islands also appear to be fault-controlled.

The islands of the Sverdrup Basin are underlain by vast thicknesses of sedimentary rocks which are younger than those of the Canadian Shield. They give rise to low-lying terrain, usually less than 600 m in elevation. Elsewhere in the High Arctic, older and harder rocks form barren upland terrain rising to over 1000 m on western Melville Island and over 2000 m on Axel Heiberg and Ellesmere islands.

Flanking the Canadian Shield to the north and west are extensive areas of near-horizontal sedimentary rocks, mostly limestone, which form the Northern Platform Lowlands. These undulating plateau-like areas make up much of Victoria and Prince of Wales islands and extend southward to form the Mackenzie Lowlands to the east of Great Slave and Great Bear lakes.

The Arctic Coastal Plain is a low-lying zone adjacent to the Arctic Ocean and extends from Meighen Island through Prince Patrick and Banks islands to the Mackenzie Delta and the northern Yukon coast. It consists predominantly of sand, gravel and silt, often possessing high ice content, as in the Mackenzie Delta and parts of western Banks Island.

The final physiographic region, encompassing all of Yukon except the northern Yukon coastal plain, and including the Mackenzie Mountains of the NWT, is the Northwestern Cordillera. This is a region of extensive fold mountains, together with intermontane plateaus, of complex geological structure.

In northern Yukon, the British Mountains rise to over 1500 m. They join the northern tip of the north-south trending Richardson Mountains, which extend southward to link with the ranges of the Mackenzie Mountains. Much of northern and central Yukon consists of a series of intermontane plateaus and mountain ranges. Elevations in the Yukon and Porcupine plateaus rise to 1800 m, and peaks in the Ogilvie and Wernecke mountains exceed 2200 m. In the extreme southwest of Yukon, coastal mountain ranges from the majestic ice-capped St. Elias Mountains culminate in Mount Logan (6050 m), the highest elevation in Canada.

2.4.2 Hydrology

Numerous lakes and an intricate network of surface drainage characterize northern Canada. The Mackenzie River, the largest in Canada, drains northward from Great Slave Lake and flows toward the Arctic Ocean where the Mackenzie Delta constitutes a unique region of numerous channels and lakes just north of the tree-line. Several large tributaries, such as the Liard, Keele, Arctic Red and Peel rivers drain the eastern flanks of the Mackenzie Mountains and interior Yukon. Much of Yukon is drained by the headwaters of the Yukon River. Its larger tributaries draining the interior intermontane areas of Yukon are the Pelly and Stewart rivers. The Yukon River ultimately passes into Alaska, where it is joined by the Porcupine River, which drains the upper part of the interior of Yukon.

The rivers and streams in northern Canada are subject to unique flooding problems because flow is so influenced by snowfall, snowmelt, ice cover breakup and ice jams and for some large rivers, especially the Mackenzie, the fact that their upper reaches are located far to the south where snowmelt and runoff occurs before downstream ice cover has broken up (Table 2-2). In the smaller streams between 25 and 75 per cent of total runoff may take place within a two-week period. The annual highest peak flows are usually produced by summer rains; on glacial-fed streams these flows result from a combination of glacial melt and rains. The prediction of the time of break-up and the magnitude of the annual flood is an important concern to settlements located along the major rivers in northern Canada.

The Mackenzie River is navigable throughout its length from Hay River on the south shore of Great Slave Lake to Tuktoyaktuk on the Beaufort Sea coast. The river system plays a vital role in the transportation of materials and the annual re-supply of settlements in the western Arctic. During the navigation season barges frequent the waterway. However, the season is relatively short since break-up starts in May just north of the Liard River junction and freeze-up starts in early October in the Mackenzie Delta (Table 2-2).

2.4.3 Glaciation

Nearly all of northern Canada has been glaciated at some time during the last two million years. Today, however, only five per cent of the Canadian North is covered by glaciers. With a few exceptions, these areas are located in either the highland northeastern rim of the Canadian Shield, on eastern Baffin and Ellesmere islands, or in the St. Elias Mountains of southwestern Yukon. There are two ice caps, the Barnes and Penny, on Baffin Island and numerous glaciers extend to the sea, especially on Ellesmere Island. The Icefield Ranges of the St. Elias Mountains, in Yukon are especially impressive.

There is widespread evidence of the existence of more extensive glaciation in the past. The deeply eroded valleys and fiords of Baffin Island provide striking examples of previously glaciated mountain terrain. By contrast, but equally revealing, much of the Canadian Shield and interior lowlands is mantled with a veneer of glacial till and coarse outwash or ice-contact deposits left by the retreating ice sheets. Even today, extensive areas of the NWT are experiencing isostatic rebound, following earlier depression of the earth's crust beneath the tremendous weight of these ice sheets (Figure 2-5A). Raised beaches and marine sediments are widespread throughout parts of Keewatin and many of the central Arctic Islands, and are often found at some distance from the coast (Figure 2-5B). Only the extreme northern and western Arctic Islands, together with parts of the Mackenzie Delta and interior northern Yukon, escaped glaciation during the last ice advance which culminated approximately 18,000 years ago (Figure 2-5C).

2.4.4 Permafrost

One consequence of the extended period of winter cold and the relatively short period of summer thaw is the formation of perennially frozen ground. The term "permafrost" describes the thermal condition of earth materials when their temperature remains below 0°C for a number of years. Above the permafrost is a surface layer of soil or rock, called the active layer, which thaws in summer and freezes in winter. In theory, the occurrence of permafrost has little relation to the presence of moisture in the ground. However, ice is an important component of permafrost in certain areas, such as the Mackenzie Delta, and gives rise to important geotechnical problems associated with either the heaving of the ground or the melting of ice-rich permafrost.

One-half of Canada's land surface, including most of Yukon and the NWT, is underlain by permafrost (Figure 2-6). Permafrost is divided into two zones: continuous and discontinuous. In the continuous permafrost zone, usually those areas north of the tree-line, permafrost exists everywhere beneath the land surface and varies in thickness from approximately 100 m at the southern limit to over 1000 m in the extreme north. In the discontinuous permafrost zone, some areas are free of permafrost. Table 2-3 gives representative permafrost thicknesses for a number of localities in Yukon and the NWT.

Although most of Yukon falls into the discontinuous permafrost zone, permafrost is continuous in the extreme north, including the Eagle Plain, the Old Crow Basin and the northern Yukon coastal plain. Elsewhere, permafrost is widespread north of Dawson City but scattered and mostly restricted to north-facing slopes and poorly drained terrain in central Yukon. In southern Yukon, permafrost is most commonly associated with areas of organic materials which, because of their insulating qualities, inhibit the thawing of frozen ground.

Extensive areas of the NWT lie within the continuous permafrost zone. In the Mackenzie Valley, the Mackenzie Delta and certain of the Arctic Islands, such as Banks Island, the permafrost is ice-rich and consists of thaw-sensitive, fine-grained sediments. By contrast, in parts of Keewatin and the eastern Arctic, permafrost occurs in coherent Shield rocks with low ice contents and with low thaw-sensitivity values.

In general, the southern limit of continuous permafrost in the NWT coincides with the mean annual air temperature of -8.3°C, and the southern limit of discontinuous permafrost with -1.0°C. In the mountainous regions of the interior of Yukon, permafrost conditions vary with both elevation and aspect. Usually, permafrost consists of a continuous zone at high elevations and below that, a discontinuous zone down to the lower limit of permafrost.

Permafrost terrain produces a number of distinct landforms. The most widespread are tundra polygons, formed by the thermal contraction of the ground in winter under the intense cold. Ice wedges, sometimes several metres deep and up to 1.5 m wide near the surface, may form in the cracks. Other features are produced by the aggradation of ice within the frozen materials, pingos for example, which are ice-cored hills or mounds, often conical in form. The Mackenzie Delta has the largest concentration of these features in the world, over 1400, some of which rise more than 30 m above the level of the surrounding tundra. Numerous other types of frost mounds occur in permafrost terrain. They are usually smaller than pingos and include palsas, which grow through ice segregation beneath organic material and occur mostly in the discontinuous permafrost zone.

"Thermokarst" describes the landforms produced by the melt of permafrost. Typically, this process follows from disturbance of the thermal equilibrium of the permafrost. Man-induced thermokarst may result from the removal or destruction of surface vegetation. Mass wasting processes manifested in several types of slope failure are also important in northern Canada, especially in permafrost areas.

Frost shattering of exposed bedrock is widespread and is thought to be the cause of tors, coarse debris-mantled slopes and of felsenmeer, extensive areas of angular boulders and rock fragments. Such phenomena are particularly conspicuous in the unglaciated interior Yukon, where bedrock exposures are common, and in the polar desert regions of the High Arctic.

In practical terms, the importance of permafrost cannot be overemphasised, since it influences virtually all aspects of life in those regions which it underlies. Referring specifically to Alaska and to experience in constructing the Alaska Highway during World War II, S.W. Muller of the US Army Corps of Engineers wrote in 1947, "The destructive action of permafrost phenomena has materially impeded the colonisation and development of extensive and potentially rich areas in the north. Roads, railroads, bridges, houses and factories have suffered deformation, at times beyond repair, because the condition of permafrost was not examined beforehand, and because the behaviour of frozen ground was little if at all understood." While research in Canada in the last three decades has modified the last assertion, this general statement still holds true for much of northern Canada today. In recent years, exploration for natural resources such as minerals and oil and gas has extended into the permafrost regions in Canada. Appreciation of permafrost conditions and the unique problems they present is essential if the environmental impact of such activities is to be minimized.

2.4.5 Vegetation

A close relationship exists betweeen the climatic and permafrost conditions in Yukon and the NWT and the northern vegetation. Some rough correlations between physical climate and biotic distribution are presented in Table 2-4.

The Canadian North is commonly divided into several major vegetation zones or ecoregions (Figure 2-7). The Boreal Forest refers to the extensive coniferous forests which extend northward toward the tree-line. Black spruce is dominant, while white spruce and birch occur on better-drained sites. In places, tamarack, poplar, alder and willow are present. Near the tree-line, the Boreal Forest gives way to open woodland or Forest Tundra. The spruce become stunted, three to four m in height, and shrub birch, blueberry, willow, Labrador tea and lichens become important. The tree-line itself cannot be accurately defined; it is a zone in which trees gradually disappear. As such, the tree-line may be as much as 100 km in width.

Forest fires are an important component of the boreal forest ecosystem. In northern Yukon, a tussock-hummock tundra often develops following fire; alternatively, white spruce invade to be followed later by black spruce.

North of the tree-line, the arctic tundra can be subdivided into Low (Meadow) Tundra and High Tundra. In the Mackenzie Delta and northern Yukon, the Low Tundra consists of low shrub tundra on sloping terrain, together with cottongrass, tussock heath tundra and wet sedge tundra in poorly-drained areas. Northward, on Banks and Victoria islands and at higher elevations on the mainland, a transition to High Tundra begins. Compact, dwarf-like and hardy flowering species occur together with lichen-moss assemblages on exposed hillslopes and well-drained localities, while sedge-moss tundra and herb-moss communities develop in the moister, more sheltered valleys.

In the extreme northern islands, Polar Desert conditions exist. Here, the vegetation cover is less than 10 per cent vascular plants and between 10 and 30 per cent moss-lichen-patina. Late-lying snowbanks, by providing moisture throughout much of the short summer, are often important controlling factors in plant growth.

Vegetation is closely associated with patterned-ground phenomena in northern regions. Hummocks 1 to 3 m in diameter and 0.5 to 1.0 m high are widespread throughout the boreal forest zone of the Mackenzie Valley and the interior of Yukon.

2.4.6 Wildlife

Of the many environmental features in Yukon and the NWT, none are held more important than those of wildlife. Generally, wildlife numbers are low in Yukon and the NWT because of the short growing season and low levels of plant production.

The boreal forests are relatively low in wildlife production because areas of closed forest produce little vegetation of value to animals. The forests are populated by squirrels, marten, wolverine, mink, moose, woodland caribou and, in wet-lands, muskrat and waterfowl. There are trout, pike, whitefish and several other species of fish in the lakes. Since northern lakes are nutrient-poor and have cold temperatures, fish growth is slow. This is reflected by the restricted level of commercial fishing in Great Slave Lake. Rivers are often more productive. Barren-ground caribou overwinter in the open woodland and forest tundra, where there is shelter from winds and abundant lichen and low shrub vegetation.

The tundra areas north of the tree-line are also generally low in animal production. Exceptions are the Mackenzie Delta, the Old Crow Basin, Banks Island and the coastal waters of Baffin Island.

The Mackenzie Delta has thriving populations of muskrat in the delta lakes and channels, fish in the channels and waterfowl and beluga whale in the bays. This resource base largely supports the local peoples of Fort McPherson, Aklavik, Tuktoyaktuk and Arctic Red River.

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Table 2-1A

Mean monthly and annual temperatures (°C) at selected northern weather stations

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
YUKON													
Dawson	-28.6	-23.0	-14.1	-1.8	7.8	13.9	15.5	12.7	6.4	-3.2	-16.5	-25.3	-4.7
Snag	-28.2	-22.3	-13.9	-2.8	6.6	11.9	13.9	11.2	5.2	-5.3	-18.8	-27.3	-5.8
Watson Lake	-25.3	-18.3	-10.5	-0.6	7.4	13.2	14.9	13.0	7.8	0.1	-13.6	-22.6	-2.9
Whitehorse	-18.9	-13.2	-7.7	-0.1	7.1	12.4	14.1	12.3	7.8	0.7	-9.0	-15.8	-0.8
NWT													
Aklavik	-28.6	-27.4	-22.3	-12.7	-0.4	9.6	13.8	10.8	3.6	-7.1	-19.5	-27.3	-8.9
Alert	-32.1	-33.3	-33.0	-24.7	-11.2	-0.6	3.9	0.9	-10.1	-19.7	-26.1	-29.8	-18.0
Arctic Bay	-29.8	-31.1	-27.7	-19.8	-7.6	2.1	5.8	4.8	-1.6	-11.1	-21.1	-26.8	-13.7
Baker Lake	-33.6	-32.8	-27.0	-17.6	-7.2	3.2	10.7	9.8	2.4	-7.5	-20.2	-27.5	-12.3
Cambridge Bay	-33.7	-34.6	-30.1	-22.2	-9.6	1.5	8.2	6.9	-0.5	-11.1	-23.8	-29.6	-14.9
Chesterfield	-31.8	-31.9	-25.7	-16.8	-6.8	2.4	8.7	8.3	2.6	-5.2	-16.9	-25.7	-11.6
Clyde	-26.9	-27.4	-26.3	-18.7	-6.9	0.9	4.6	4.0	-0.1	-6.6	-16.9	-24.2	-12.1
Coppermine	-29.4	-30.9	-26.1	-17.7	-5.7	3.5	9.3	8.6	2.3	-6.3	-19.5	-25.7	-11.4
Coral Harbour	-30.4	-29.5	-24.5	-16.4	-6.5	2.0	8.6	7.5	1.0	-7.7	-17.1	-24.5	-11.4
Eureka	-36.6	-37.7	-36.7	-27.6	-10.1	2.3	5.5	3.6	-7.7	-21.8	-30.7	-34.8	-19.3
Fort Reliance	-30.1	-27.5	-21.8	-10.2	0.9	8.7	13.3	12.8	6.2	-2.0	-14.1	-23.7	-7.3
Fort Simpson	-26.0	-23.3	-15.0	-3.8	7.8	14.3	16.8	14.6	7.7	-1.2	-14.2	-23.8	-3.8
Fort Smith	-26.9	-22.6	-14.6	-3.2	7.1	13.1	16.1	14.3	7.7	0.5	-11.8	-21.4	-3.5
Frobisher Bay	-26.2	-25.2	-22.3	-14.0	-3.3	3.5	7.9	6.9	2.4	-4.7	-12.4	-20.3	-8.9
Hall Beach	-31.7	-31.6	-28.3	-20.0	-8.8	0.3	5.4	4.9	-0.6	-10.2	-20.9	-26.9	-14.0
Isachsen	-35.1	-36.4	-34.3	-25.6	-11.7	-0.8	3.3	1.1	-8.8	-19.4	-28.2	-32.5	-19.1
Mould Bay	-33.8	-35.6	-32.4	-23.6	-10.9	-0.3	3.7	1.7	-6.6	-17.8	-25.6	-31.3	-17.8
Norman Wells	-28.7	-25.6	-18.9	-7.4	5.1	13.7	16.1	13.2	5.8	-4.1	-18.1	-25.9	-6.3
Nottingham Island	-24.5	-24.3	-20.2	-12.8	-4.2	1.6	5.9	5.7	1.5	-3.4	-10.2	-18.1	-8.6
Resolute	-32.6	-33.5	-31.1	-23.1	-10.7	-0.3	4.3	2.7	-4.9	-14.7	-24.2	-28.8	-16.4
Sachs Harbour	-29.7	-30.9	-27.3	-19.2	-7.3	2.2	5.6	4.3	-1.8	-11.6	-21.7	-26.7	-13.7
Yellowknife	-28.6	-25.7	-18.6	-7.8	4.0	12.2	16.0	14.1	6.8	-1.2	-14.2	-23.8	-5.6

Table 2-1B

Mean monthly and annual precipitation (mm) at selected northern weather stations

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
YUKON													
Dawson	19.3	16.0	12.7	9.1	21.8	36.8	53.1	50.6	28.5	26.7	25.2	25.7	325.5
Snag	21.1	17.0	15.8	15.0	30.5	55.4	69.9	44.5	28.5	20.1	21.1	21.1	360.0
Watson Lake	35.1	28.2	23.9	18.3	23.1	48.8	53.1	44.7	43.2	34.8	37.9	41.2	432.3
Whitehorse	18.5	14.0	14.7	10.7	13.5	28.7	33.3	36.1	29.0	19.8	22.4	19.6	260.3
NWT													
Aklavik	11.9	10.7	11.2	8.1	8.1	18.3	33.8	36.1	20.1	32.3	21.1	24.4	236.1
Alert	7.6	5.3	7.1	6.6	10.7	13.5	18.0	27.4	27.9	15.8	8.1	8.1	156.1
Arctic Bay	5.8	4.3	5.6	4.1	6.6	7.6	19.3	24.1	21.6	15.2	6.9	4.6	125.7
Baker Lake	7.1	5.6	9.7	13.0	9.4	16.0	35.6	34.5	33.8	25.9	16.3	6.1	213.0
Cambridge Bay	5.3	4.1	5.6	5.8	7.9	13.5	22.1	26.2	16.3	15.8	8.9	5.6	137.1
Chesterfield	7.6	5.1	10.2	13.0	15.8	25.9	41.4	37.3	40.4	31.5	20.8	14.5	263.5
Clyde	10.9	6.6	5.1	8.4	14.0	10.7	23.4	30.2	38.6	32.5	18.3	7.6	206.3
Coppermine	10.4	5.8	11.2	10.4	11.2	16.8	33.5	39.9	27.2	25.2	14.5	10.2	216.3
Coral Harbour	8.6	10.2	11.7	14.7	17.5	26.4	40.4	43.9	34.5	30.0	17.8	11.4	267.1
Eureka	2.8	2.3	1.5	2.0	2.8	3.8	13.0	9.1	10.2	6.1	2.8	2.0	58.4
Fort Reliance	12.5	9.4	8.4	9.9	10.9	23.9	33.5	30.2	30.0	26.7	20.3	14.0	229.7
Fort Simpson	20.8	14.5	18.5	21.6	20.8	43.7	49.8	46.7	40.4	26.2	23.4	19.1	345.5
Fort Smith	17.5	15.5	14.5	17.5	24.6	33.8	52.8	37.9	37.6	28.7	27.7	23.1	331.2
Frobisher Bay	24.4	27.9	20.6	22.4	22.9	37.9	53.1	57.9	43.4	41.7	36.8	26.2	415.2
Hall Beach	9.1	9.9	8.9	9.7	16.0	12.2	28.7	31.8	18.0	22.6	15.5	9.9	192.3
Isachsen	2.3	2.3	2.3	3.8	9.1	7.6	21.1	21.8	15.5	9.9	4.3	2.3	102.3
Mould Bay	2.3	2.0	2.5	2.5	6.9	6.1	16.8	20.3	12.7	8.4	2.8	3.1	86.4
Norman Wells	20.8	17.3	12.5	14.2	15.2	36.6	56.1	61.7	33.8	25.2	21.8	19.3	334.5
Nottingham Island	12.5	11.7	9.9	14.5	16.5	21.6	31.2	35.8	37.1	33.5	29.2	16.3	269.8
Resolute	2.8	3.3	3.1	5.8	8.6	12.5	26.4	30.5	17.8	15.2	5.6	4.8	136.4
Sachs Harbour	2.3	2.3	2.5	2.5	7.4	7.9	18.3	22.1	13.5	13.5	6.4	3.8	102.5
Yellowknife	13.7	12.2	11.7	10.2	14.0	17.3	33.3	36.3	28.2	30.7	23.9	18.5	250.0

Table 2-2
Mean freeze-up and break-up dates, Mackenzie River, 1946-1955

Location	Distance from Great Slave Lake (km)	Freeze-up	Break-up
Fort Providence	80	Nov. 24	May 18
Fort Simpson:			
-- Mackenzie above Fort Simpson	335	Nov. 27	May 15
— Mackenzie below Fort Simpson	351		May 11
Fort Norman	825	Nov. 15	May 14
Norman Wells	909	Nov. 10	May 15
Fort Good Hope:			
— Ramparts	1094	Nov. 5*	May 22
— Settlement	1101	Nov. 12	May 15
Arctic Red River Settlement:			
— Arctic Red River	1445	Oct. 8	May 25
— Mackenzie River	1445	Nov. 1	May 24
Lang Trading Post	1561	Oct. 9**	May 26
Aklavik	1607	Oct. 9**	May 28
Reindeer Station	1615	Oct. 18*	May 27

* Seven years of record
** Nine years of record

Table 2-3
Representative thicknesses and permafrost temperatures in Yukon and the NWT

Location	Ground Thickness of permafrost (m)	Mean surface temeprature (°C)	annual air temperature (°C)
Yukon:			
Dawson City	60	-2.0	-4.7
Eagle River bridge, Dempster Highway	90	-2.5	n/a
United Keno Hill Mines Ltd.	135	-1.5	-4.0 (Elsa)
NWT:			
Fort Simpson	0-15	n/a	-3.8
Yellowknife	60	-2.0	-5.5
Norman Wells	45-76	-2.5	-6.5
Inuvik	360	-4.0	-9.7
Rankin Inlet	350	-7.0	-11.6*
Storkerson Bay A-15 wellsite, Banks Island	430	-12.0	-13.7**
Resolute Bay	400-600	-13.0	-16.4

* Chesterfield Inlet
** Sachs Harbour

Table 2-4
Some values typical of northern vegetation zones and boundaries

Zone	Climatic values			
	A	B	C	D
Tundra Zone:				
Tundra, Queen Elizabeth Islands	5	1	5-10	75
Tundra, southern areas	10	2	10-15	90-120
Arctic tree-line	10-13		15-20	120-145
Boreal Zone:				
Forest tundra and woodland	13-15	3-5	20-25	150-170
Northern forest line	15		30	168-175
Boreal forest	15-18		30-35	180-210
Southern boreal limit	16-18	5-10	34-40	200-225

Key to Columns:
A: Mean daily temperature, degrees C, July
B: Net annual production of plant material (tons/hectare/year)
C: Annual net radiation (kilolangleys per year) mean value
D: Duration of thaw season in days (temperature exceeds 0°C)

Figure 2-1:
Duration of Daylight Through Year, as a Function of Latitude

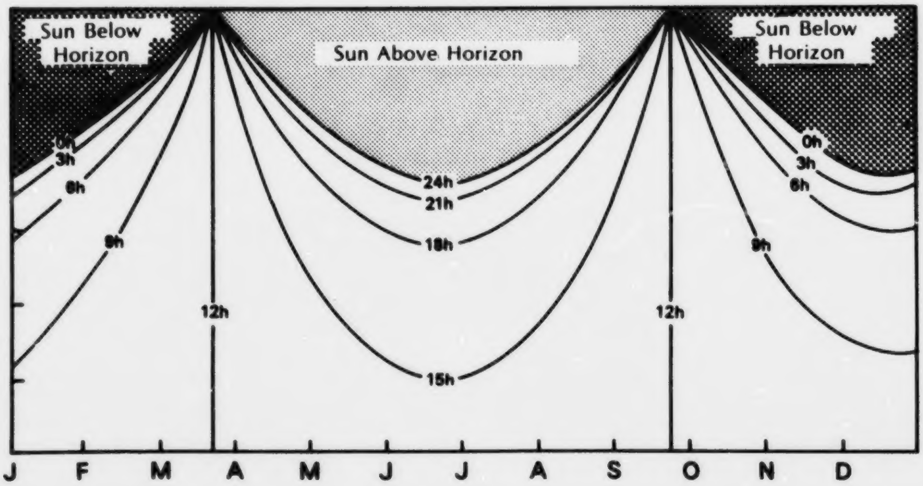


Figure 2-2A:
Mean Daily Temperatures in Northern Canada, January,
Degrees celsius

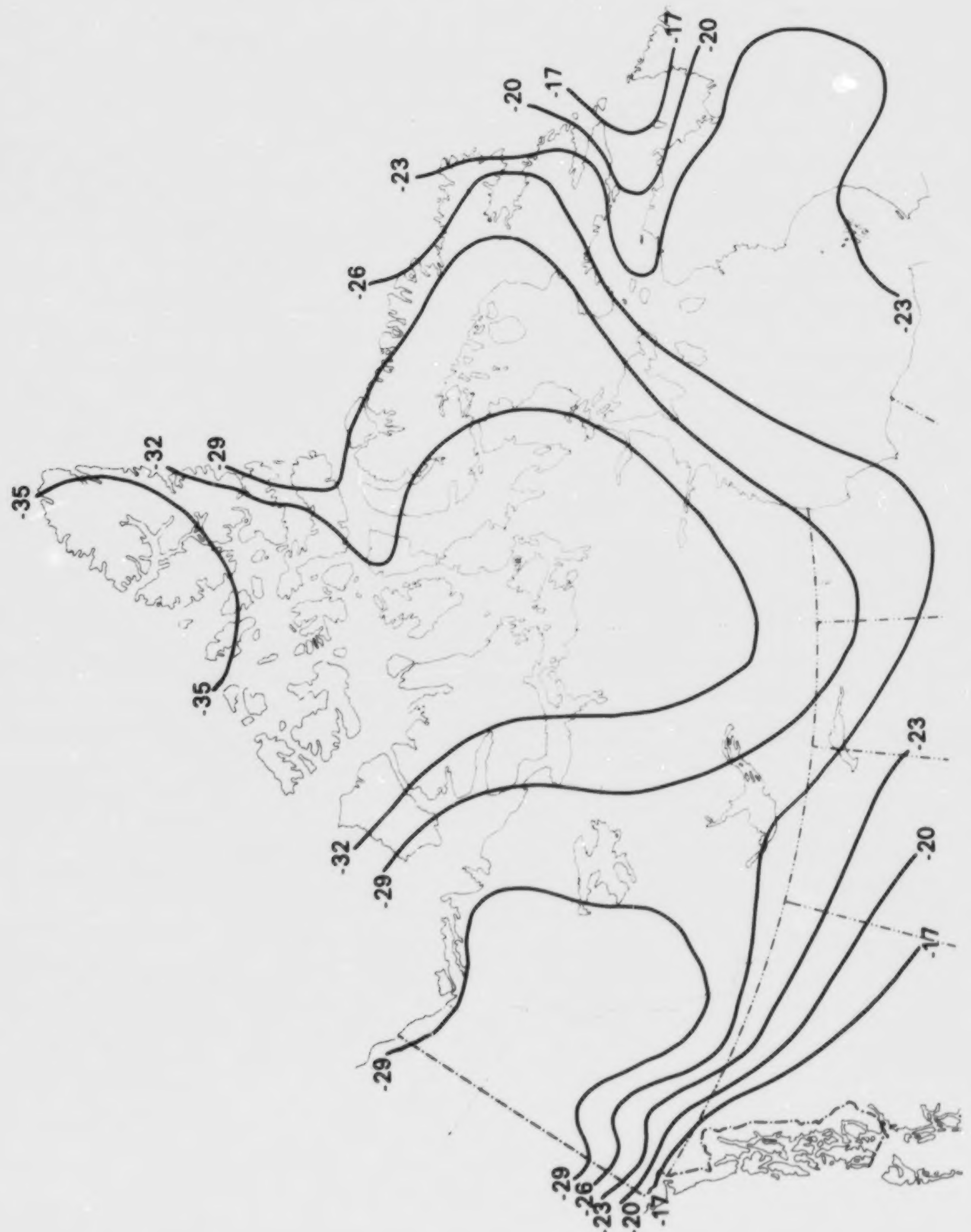

-17
-20
-20
-17
-23
-26
-23
-32
-29
-35
-35
-32
-29
-23
-20
-17
-29
-29
-26
-23
-20
-17

Figure 2-2B:
Mean Daily Temperatures in Northern Canada, July.
Degrees celsius

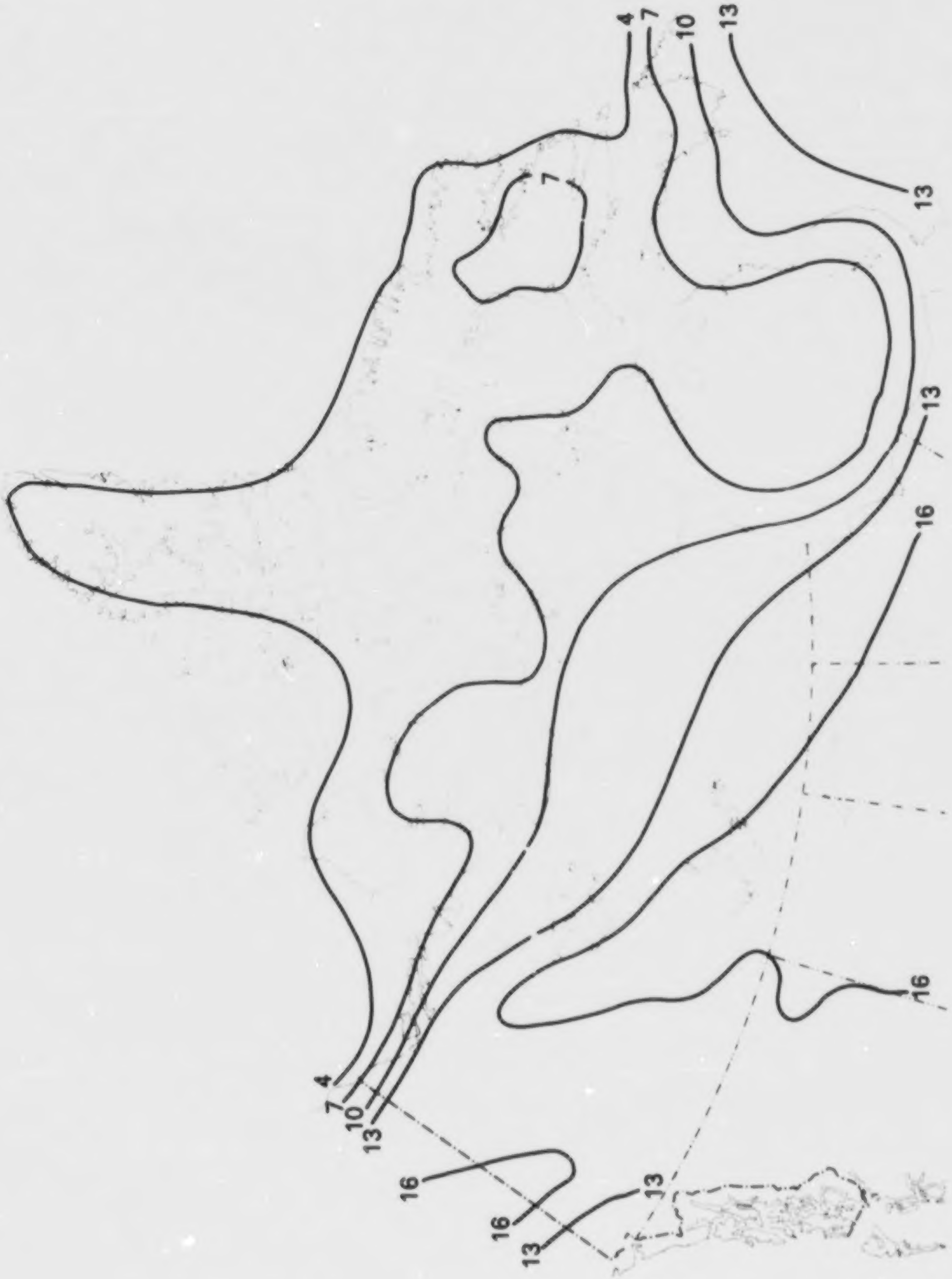

4
7
10
13
7
13
13
16
16
4
7
10
13
16
16
13
13

Figure 2-3:
Temperature/Wind Chill Index

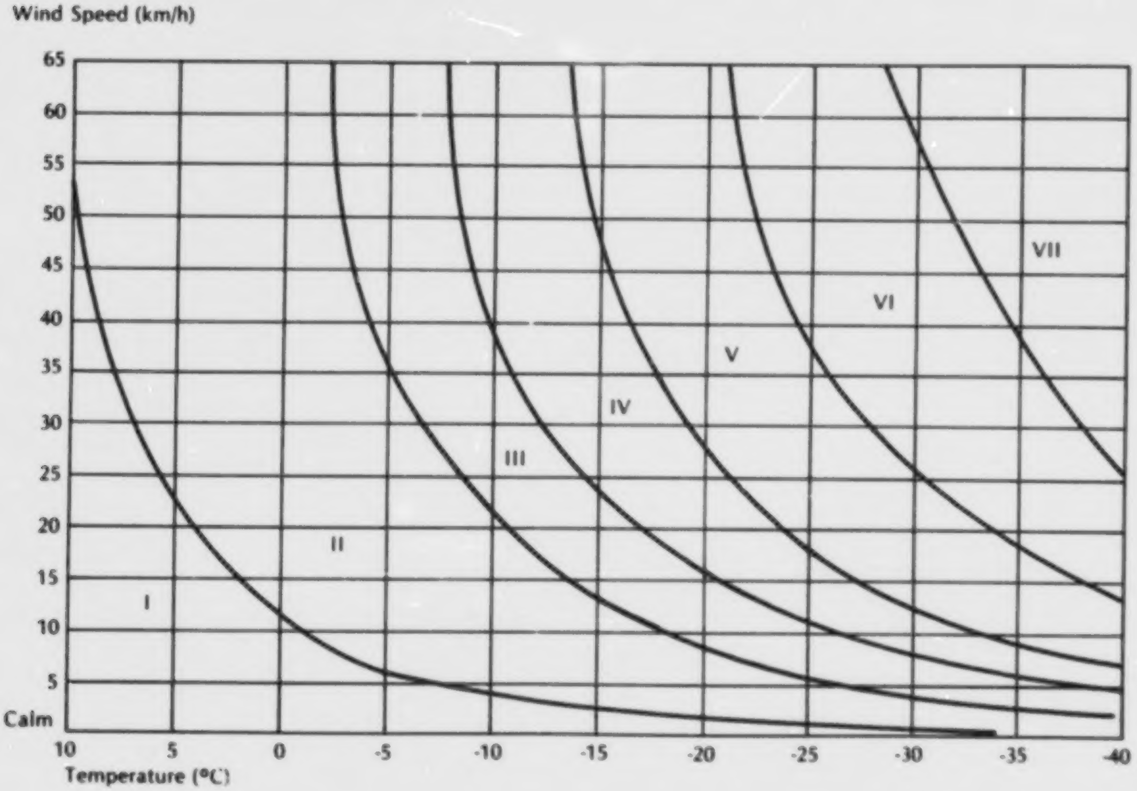
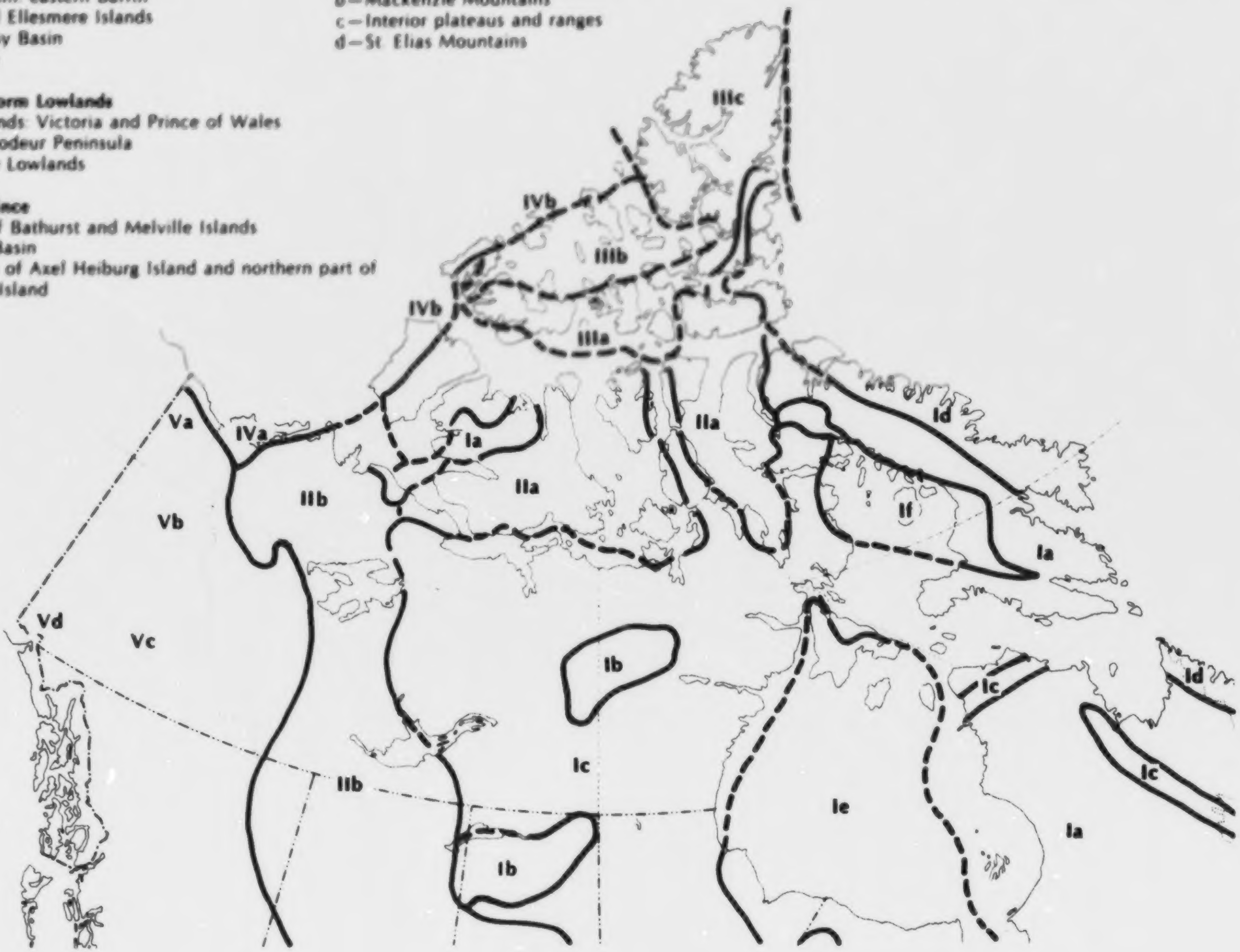


Figure 2-4:
Physiographic Regions of Northern Canada



I—Canadian Shield
- a—Lowlands, hills and plateaus: Central Keewatin and Mackenzie District
- b—Sandstone plains: Central Keewatin
- c—Folded sedimentary hills: northern Quebec and Labrador
- d—Highland rim: eastern Baffin Devon and Ellesmere Islands
- e—Hudson Bay Basin
- f—Foxe Basin

II—Northern Platform Lowlands
- a—Arctic Islands: Victoria and Prince of Wales Islands, Brodeur Peninsula
- b—Mackenzie Lowlands

III—Innuitian Province
- a—Uplands of Bathurst and Melville Islands
- b—Sverdrup Basin
- c—Mountains of Axel Heiburg Island and northern part of Ellesmere Island

IV—Arctic Coastal Plain
- a—Mackenzie Delta and northern Yukon coastal plain
- b—Western Arctic Islands

V—Northwestern Cordillera
- a—British and Richardson Mountains
- b—Mackenzie Mountains
- c—Interior plateaus and ranges
- d—St. Elias Mountains

Figure 2-5A:
Maximum Post Glacial Marine Limit

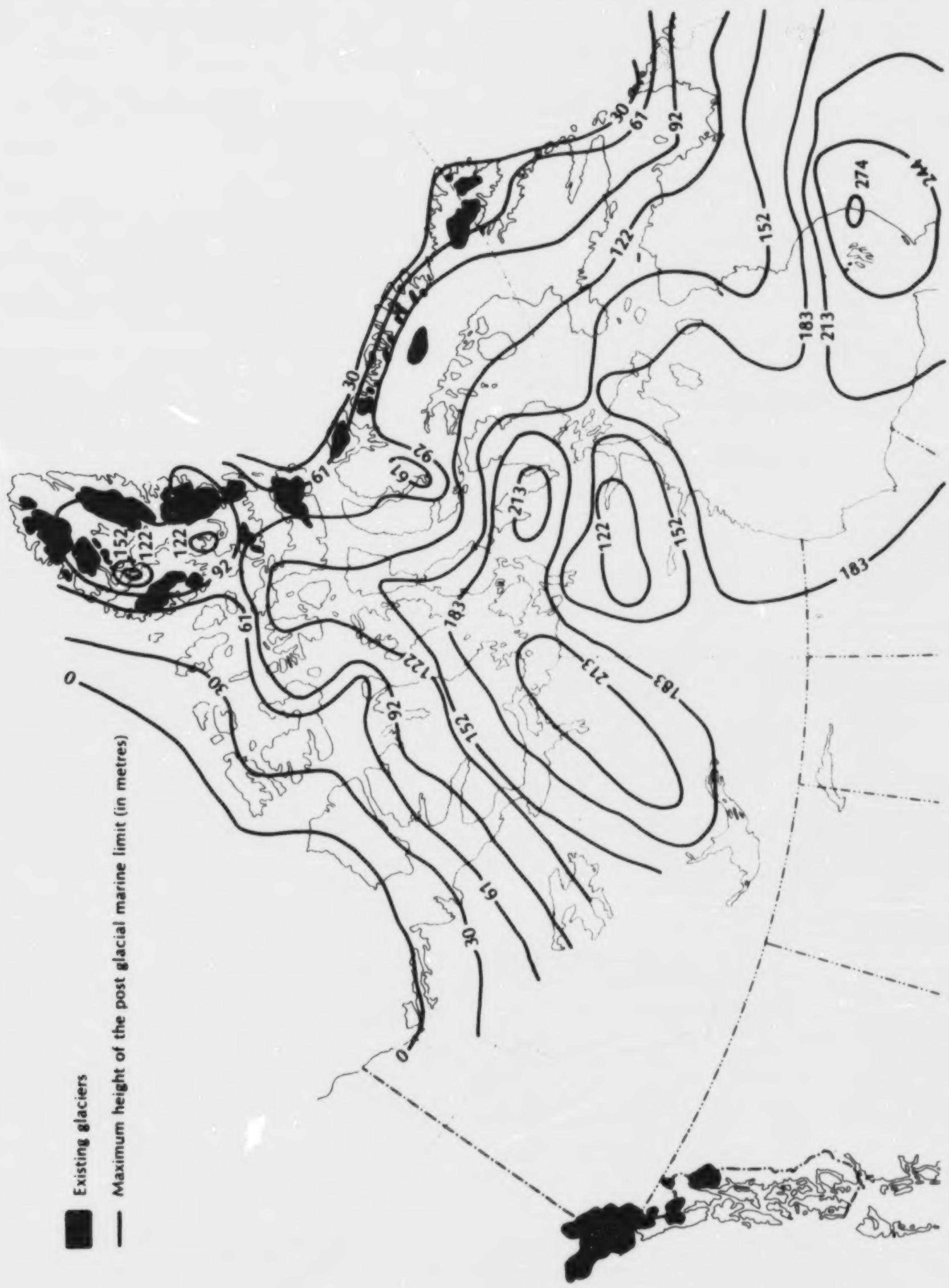

Existing glaciers
Maximum height of the post glacial marine limit (in metres)
0
30
61
92
122
152
183
213
244
274

Figure 2-5B:
Maximum Post Glacial Rebound

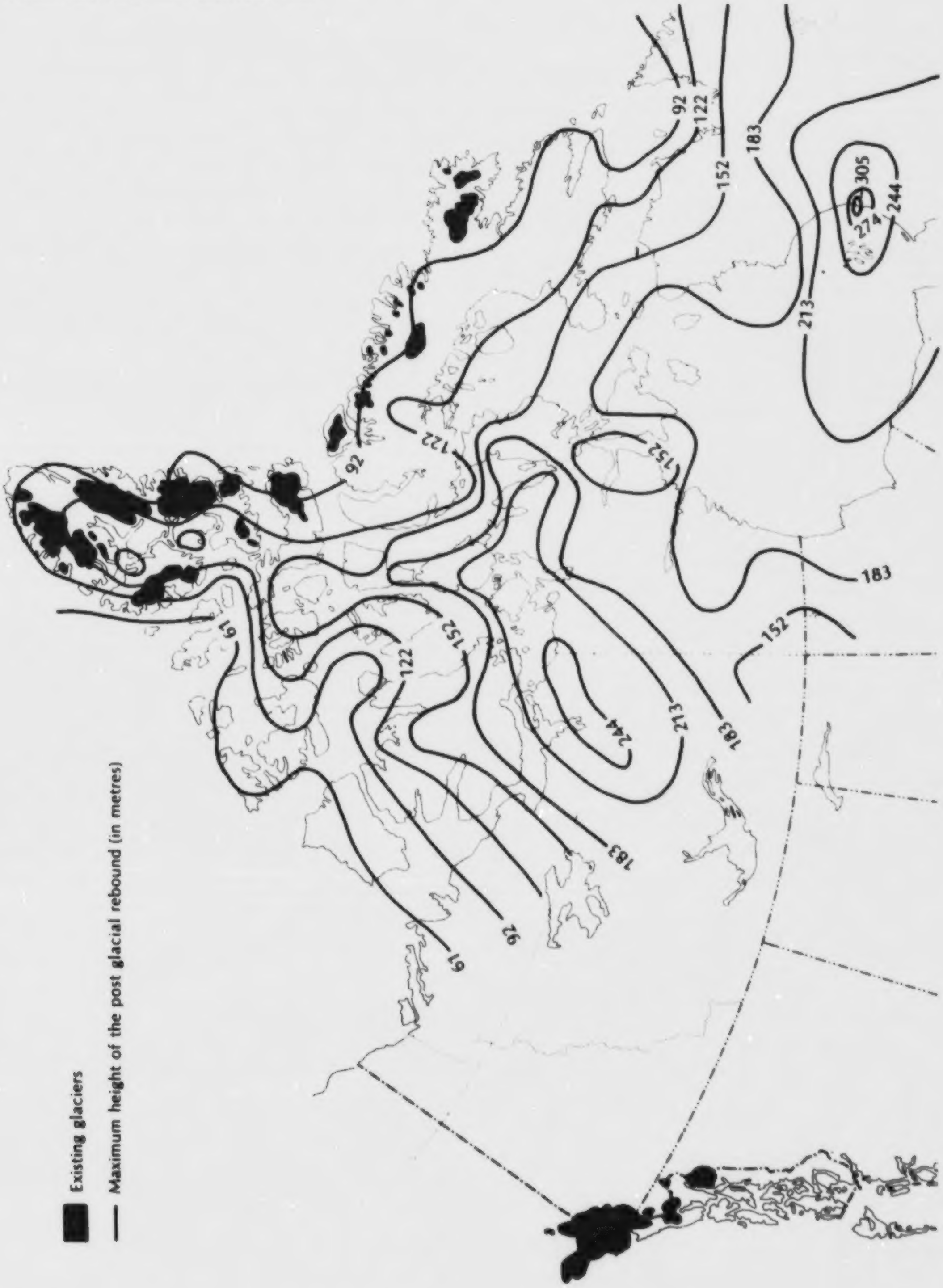

Existing glaciers
Maximum height of the post glacial rebound (in metres)
92
122
152
183
305
274
244
213
152
183
152
61
122
152
244
213
183
183
92
61

Figure 2-5C:
Stages in the Last Deglaciation of Northern Canada

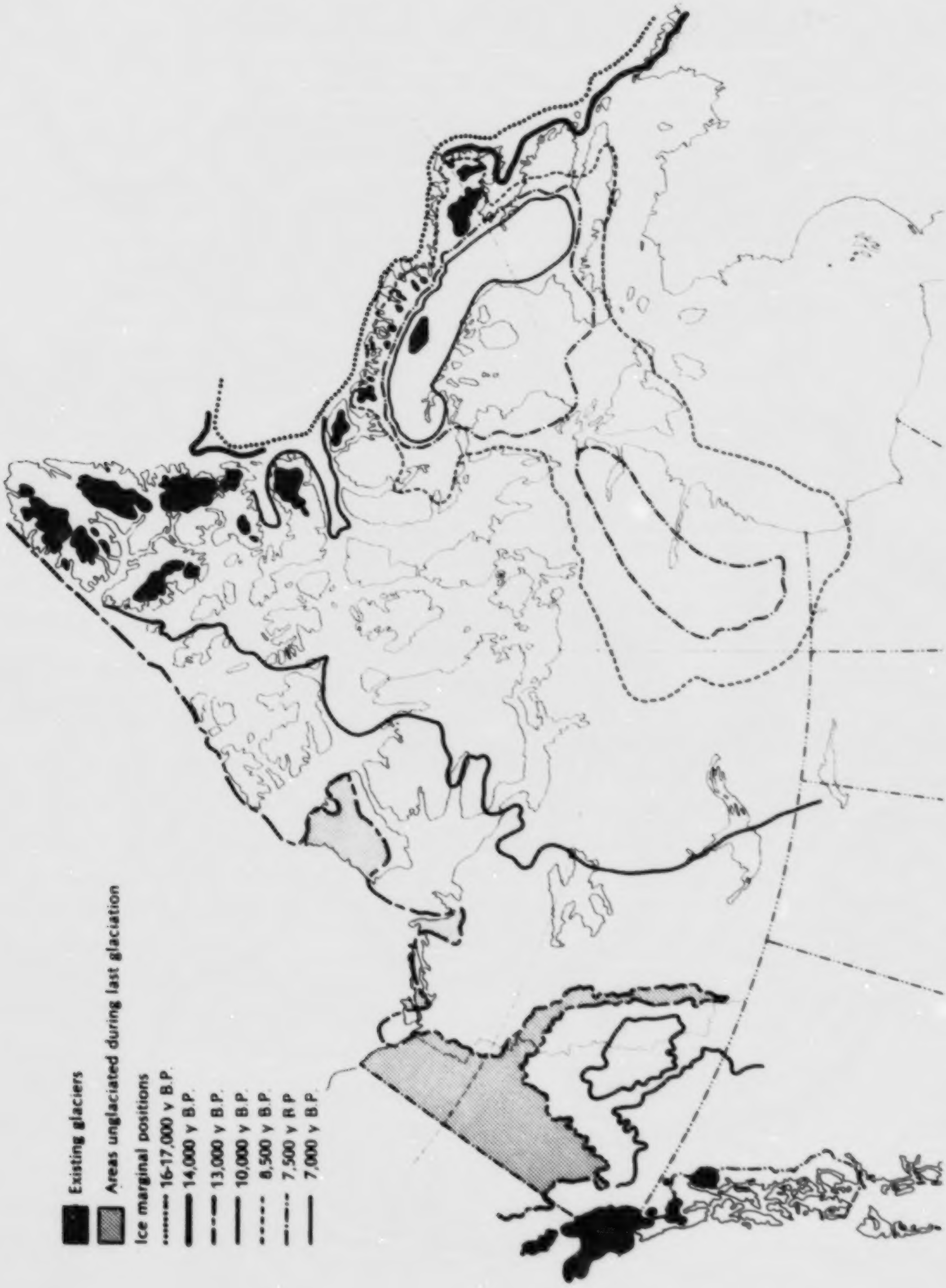

Existing glaciers
Areas unglaciated during last glaciation
Ice marginal positions
16-17,000 y B.P.
14,000 y B.P.
13,000 y B.P.
10,000 y B.P.
8,500 y B.P.
7,500 y B.P.
7,000 y B.P.

Figure 2-6:
Permafrost Distribution in Northern Canada Showing Relationship with Vegetation and Extent of Sea Ice Cover in Canadian Arctic Waters

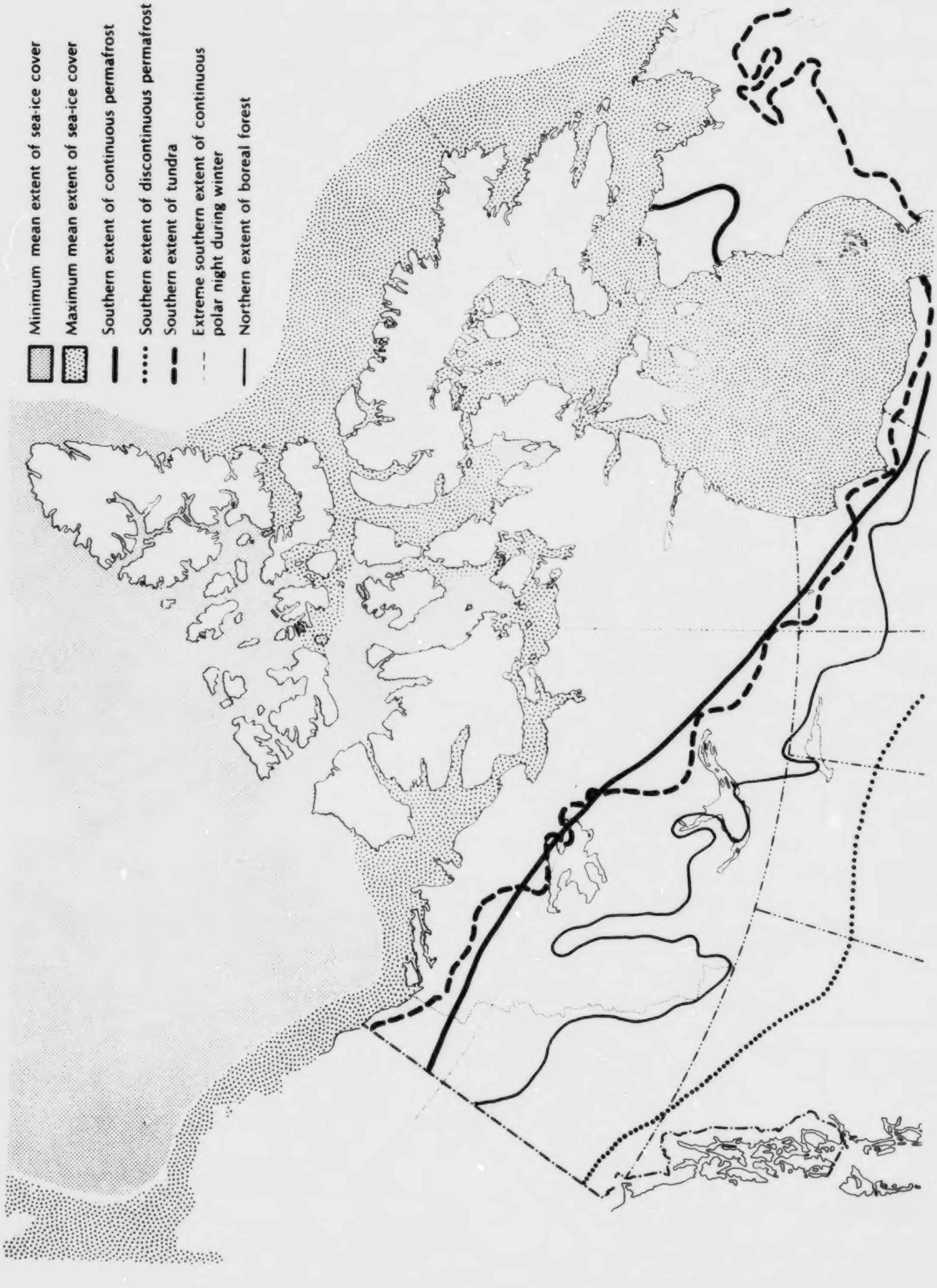
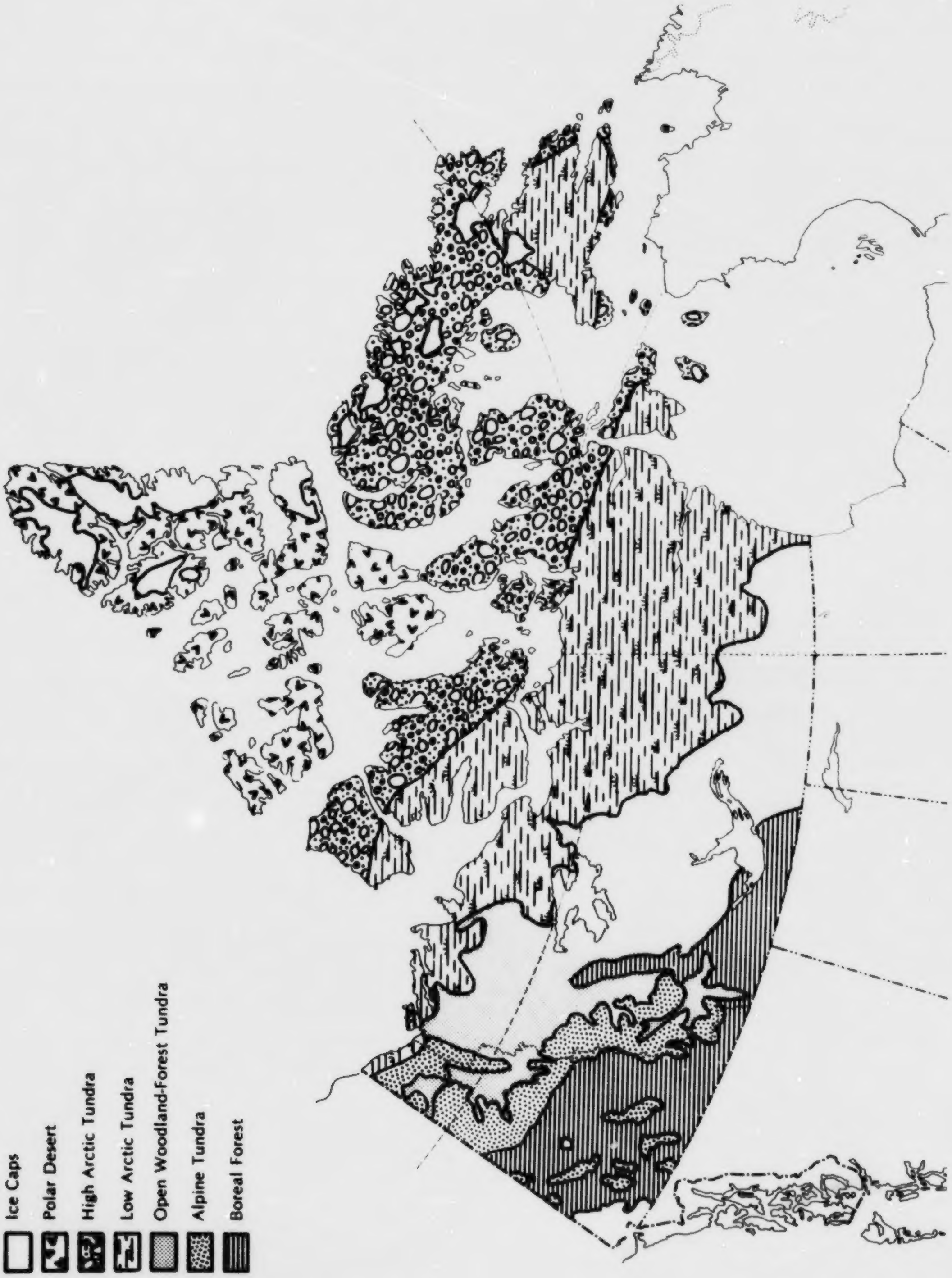

Minimum mean extent of sea-ice cover
Maximum mean extent of sea-ice cover
Southern extent of continuous permafrost
Southern extent of discontinuous permafrost
Southern extent of tundra
Extreme southern extent of continuous polar night during winter
Northern extent of boreal forest

Figure 2-7:
Major Vegetation Zones in Northern Canada


Ice Caps
Polar Desert
High Arctic Tundra
Low Arctic Tundra
Open Woodland-Forest Tundra
Alpine Tundra
Boreal Forest

3.0 People

3.1 Northern Settlements

Statistics Canada reports that the 1983 population of the NWT was 48,600 and of Yukon, 22,200. In the NWT about 20 per cent of the population live in Yellowknife, the capital city. Around 27 per cent of the population is distributed among the towns of Frobisher, Fort Smith, Hay River, Inuvik and Pine Point. Two per cent of the population live in villages, 26 per cent in hamlets and about 22 per cent in settlements. A small number, less than one per cent of the territorial population, live in so-called "unorganized" communities.

To attain city status a community must have more than 6000 inhabitants; towns need a population of at least 1000. Both cities and towns are required to have a taxable land assessment equivalent to $2500 per capita. They elect a mayor and eight council members and are responsible for setting their own municipal budgets and raising revenues through local tax assessments, sales of licences, payments of fines and fees, and sales of debentures. Villages have populations of at least 500 residents and are responsible for setting their own budgets in consultation with the territorial government; revenue sources are exactly the same as cities and towns but, given the smaller tax base, a larger proportion of the operating budget is derived from grants (in lieu of taxes paid on government property), capital construction grants, repayable loans, per capita grants and various subsidies to ensure maintenance of sanitation and other standards.

Hamlets are incorporated following petition from community members and assume many of the duties and responsibilities of villages, though with a greater degree of guidance provided in the initial years by the territorial government. Settlements also elect councils, but these are advisory in nature and have no legal powers. The opinions of the settlement council are brought to the notice of the requisite government department, which may or may not act accordingly. Settlements qualify for per capita grants up to a maximum of $12,000 per annum and have the power to use the funds on community projects as they see fit.

The smallest settlements, with no externally accountable political or municipal structure, are the "outpost camps", which number about twelve, all operating in the eastern Arctic. They receive small incentive grants and transportation and fuel subsidies, but achieve a high degree of self-sufficiency in terms of maintaining small, viable communities. There are no schools, health or other government services provided at the settlement locations, though visits from government agencies and departments may take place irregularly a few times a year.

There are several small-sized communities, usually with fewer than 100 residents, which have variable levels of infrastructure provided. For example, Colville Lake, NWT, with a population of about 57, is a small Dene community without electricity, telephones, nursing station, school or government personnel. Jean Marie River, NWT, another small Dene community, has a school and enjoys electric power and television reception. Grise Fiord, NWT, an Inuit community with about 106 residents, has a resident nurse, a school, an RCMP detachment and telephone service as well as television.

Settlements and hamlets with populations of over 150 residents generally have retail outlets, health, education and social services, and are usually served by air carriers licensed to provide point-to-point service. Most have TV, radio and postal services and many have telephones. All communities provide religious services to their residents.

In Yukon, about three-quarters of the population live in communities located on the Alaska Highway. The communities are classed as cities, towns, villages, hamlets and unorganized communities. Whitehorse, the capital, with a population of around 13,000 is the only city in the territory. While carrying the title of City, Dawson City, along with Watson Lake and Faro are classed as towns, while smaller communities such as Mayo, Teslin and Haines Junction fall into the class of village. All of these communities have fully elected councils and exercise responsibilities similar to those in other Canadian communities.

Communities with populations in the 350 (e.g., Teslin) to 1000 range (e.g., Watson Lake) generally enjoy good education, health and recreational facilities which include cottage hospitals, indoor skating and curling rinks and sometimes swimming pools and libraries.

Remaining communities within Yukon currently fall under the unorganized class and include settlements with fewer than 300 residents; these settlements may be predominantly non-native (e.g., Destruction Bay), predominantly native, (e.g., Burwash Landing), or have approximately equal numbers of Indian and non-Indian residents (e.g., Ross River). Depending largely on size, such communities may have a nursing station, an elementary school, limited recreational facilities, limited retail services but quite often telephone, radio and TV connections.

In Yukon, there are also communities which have the status of company towns, where the population depends upon the employment and municipal facilities provided by a mining company.

3.2 Population Characteristics

The northern population is a young one: about one-quarter of the people in the NWT are of school age (5 to 14 years), with about half that number in the preschool group (0 to 4 years). There is a small number (less than three per cent of the population) 65 years of age or older. Nearly two-thirds of the territorial population is, therefore, potentially in the workforce.

The birth rate of all groups in the territories is now falling and will probably be quite similar to the all-Canada rate before long. For example, there was about a 13 per cent decrease in the number of births recorded in the NWT in 1981, compared to the preceding year.

In terms of migration, abut 1700 people moved to the NWT from elsewhere in Canada in 1981, an increase of about 30 per cent over the preceding year's immigration. In addition, only about 290 people left during the year, an outmigration about ten per cent less than that recorded in 1980. However, year-to-year variation in migration is great, due to pulses in economic activity both in the North and elsewhere in the country.

There are difficulties in obtaining reliable population information for Yukon; despite the fact that the populations are smaller and located in fewer communities than in the NWT, a larger proportion is non-native and therefore likely to move from the territory when there is an economic downturn. Conversely, a sudden population growth can be experienced in anticipation of economic developments. The demographic characteristics of the population are, however, roughly similar in the two territories, with few old people and a majority of the population of working age.

Health statistics in the North have shown some dramatic shifts over the past 25 years. In the late 1940s the death rate from tuberculosis was more than 700 per 100,000 (compared to about 50 per 100,000 for all Canada), but it has declined as a major public health problem in the past twenty years or so; however, at a continuing rate of about 100 per 100,000, it remains higher than elsewhere in Canada. At the same time, many viral infections have also lost their deadly impact due to acquired immunity. The dramatic decline in TB infection has been offset by a very sharp increase in gonorrhea, from near the all-Canada rate (150 per 100,000) to a rate in excess of 6000 per 100,000 by the late 1970s. There is also a host of diseases associated with changing diet and lifestyle, unknown or very rare 25 years ago but with progressively increasing incidence rates during more recent years; these health problems include gallstones, diabetes, obesity, dental disease, cardiovascular diseases, various cancers and, particularly in the young, myopia and other eye disorders.

The leading causes of death today in Yukon and the NWT are accidents (often alcohol-related) and suicides.

3.3 Ethnicity

The native peoples form the majority of the population in the NWT. Inuit constitute about 34.6 per cent of the total, Dene about 22.8 per cent and non-natives about 42.6 per cent.

In Yukon, the Indian population numbers some 5000, or about 20 per cent of the territorial population of 22,200.

The Inuit population in the NWT is distributed among the coastal communities in the eastern Arctic, along the west coast of Hudson Bay and Foxe Basin and westward across the mainland to Aklavik on the west side of the Mackenzie Delta. There is only one Inuit community (Baker Lake) situated a significant distance from the sea. The NWT Dene communities are all in the western subarctic areas from the southern boundary of the NWT, around the shores of Great Slave Lake and northward along the Mackenzie River Valley to the Mackenzie Delta. The population of the delta community of Aklavik is made up of 52 per cent Inuit, 26 per cent Dene, 11 per cent metis and 11 per cent other, while Inuvik, on the eastern side of the delta, has a population made up of about 21 per cent Inuit, 10 per cent Dene, 5 per cent Metis and 64 per cent other.

Some of the Dene communities have large numbers of Metis residents. One of these communities, Fort Resolution, has 60 per cent Dene, 18 per cent Metis and 22 per cent other. Fort Smith has 27 per cent Metis, 18 per cent Dene/Cree, 2 per cent Inuit and 53 per cent other.

Most of the NWT communities with non-native people forming a majority of the population are in the Mackenzie District: the mining communities of Port Radium and Pine Point; the transportation and service centres of Hay River and Enterprise; the government centres of Fort Smith, Inuvik and Yellowknife; and the oil production centre of Norman Wells.

Most of the approximately 5000 status and non-status Indians in Yukon live on Crown land. About 150 live on reserves, and some live in the larger urban centres. The most sizeable Indian communities in Yukon live in Whitehorse, Dawson, Old Crow, Mayo, Carmacks and Burwash Landing. However, there are Indian residents in almost every Yukon community, with communities such as Pelly Crossing, Old Crow, Burwash Landing and Upper Liard being predominantly Indian communities, whereas Faro, Beaver Creek and Watson Lake are predominantly non-native communities. In several Yukon communities Indian and non-Indian residents are roughly equal in numbers (e.g., Teslin, Ross River and Carcross).

3.4 Languages

Language was once the basis for ascribing ethnic affiliation. However, since the advent of schools, first church-operated and subsequently government-operated, loss of mother tongue has been a significant concomitant of formal schooling, particularly in the western Arctic, where schools have operated for the longest period of time.

Initially, the native people of the NWT and Yukon spoke languages belonging to two main language families: Athapaskan and Inupik, spoken by the Dene of the subarctic forests and the Inuit of the arctic and subarctic tundra and coastal regions respectively.

The languages which are most likely to survive for some time to come include the principal dialects of the Inuit language (Inuktitut) spoken in the Baffin Region, Keewatin and central Arctic, as well as in arctic Quebec and on the Belcher Islands. Among the Dene in the Mackenzie District and Yukon, Chipewyan, Slavey and Dogrib are considered distinct languages, and each of these appears likely to survive for some time yet. Chipewyan is spoken widely across northern Saskatchewan and northern Manitoba, and in the NWT it is the predominant Indian language at Fort Resolution, Fort Smith and Snowdrift. Slavey is spoken in northern Alberta and in the NWT, principally in the communities of Fort Liard, Fort Norman, Fort Providence, Fort Simpson and Wrigley. Dogrib is spoken in the communities situated between the northern shore of Great Slave Lake and the southern shore of Great Bear Lake (e.g., in the Yellowknife area, Rae Lakes and Snare Lake). Hare, believed to be a dialect of Slavey, is spoken principally in the communities of Fort Good Hope and Fort Franklin. Kutchin is spoken in Aklavik, Arctic Red River and Fort McPherson.

The situation in Yukon is more critical with respect to the long-term survival of Indian languages, partly because the Indians still speaking the languages are few in number, but more particularly because Indians are a minority of the Yukon population. Only in Old Crow, where Kutchin is spoken, is the long-term survival of the language a distinct possibility, as much because of its currency in adjacent regions of Alaska and the NWT as because of the relative isolation, determination and social vitality of the Old Crow Kutchin. Indian languages seriously in danger of disappearing include: Trichone, spoken at Carmacks and Mayo; Tagish, spoken at Teslin and Carcross; and Kaska, spoken by Indians in northeastern BC and southeastern Yukon (e.g., Upper Liard, Watson Lake and Ross River).

An agreement between the Government of Yukon and the Council for Yukon Indians ensures that native languages are taught in eight Yukon schools. In order that the teaching of native languages may expand, Yukon College has begun to offer a native language instructor certificate course. This course extends over three years and will help develop the native language course content and related curriculum. In addition to the native languages project, there are several native programs offered in different schools with the support of the Department of Education, Advanced Education and Manpower. These programs include trapping, native dancing, crafts and native outdoor education. To aid in the presentation of these programs, a number of joint publications, by the Council for Yukon Indians and the Government of Yukon are used. Finally, cross-cultural co-ordinators are employed in a number of communities in Yukon to help the school system and parents work together to give Indian children a better education.

The federal and NWT territorial governments are making a determined effort to respond to native organizations' increased commitment to language retention. Kindergarten and junior grades are now taught in the students' mother tongue throughout the NWT and curriculum and textual developments pay considerable attention to language and associated cultural sensibilities.

Active linguistic research is carried out with support from all governments in both northern territories with a view to preparing dictionaries, grammars and improved writing systems for all the main language groups. There are native language radio and television broadcasts, simultaneous translation (Inuktitut/English) during all NWT Legislative Assembly sessions, and many native language articles in northern newspapers and periodicals. It is noteworthy also that federal enquiry reports (e.g., Environmental Assessment Reviews) dealing with the eastern Arctic appear simultaneously in English, French and Inuktitut, and that learned journals often carry article abstracts in the same three languages.

Inuktitut translators have formed a national association to further their professional needs and undertake preliminary work in terminology development aimed at coining and standardizing Inuktitut terms to cover newly introduced concepts in legal, medical, technical, scientific and financial lexicons.

3.5 Educational Levels

School enrolment in the NWT peaked at almost 13,000 pupils in 1976-77 and is now at about 12,600. Of this number about 1200 attend kindergarten and approximately 1500 attend each of the next three grades. Numbers of pupils decline steadily from the third grade onward. About 1200 pupils are in high school, in grades 10 through 12. It is likely that the number of pupils continuing with high school courses will increase as Grade 10 classes and beyond are added to schools situated in the communities. The lack of local high school classes is seen as a special problem for Inuit pupils in the eastern Arctic, despite the presence of one high school in the region, at Frobisher Bay. Other high schools are located at Fort Smith, Hay River, Inuvik, Pine Point and Yellowknife. Though high schools offer vocational education as well as academic subjects, many other opportunities are available for students to enrol in vocational training programs; some of these are offered in home communities if numbers warrant. Thebacha College at Fort Smith (until recently known as the Adult Vocational Training Centre) offers a variety of courses in teacher education, business education, dental technician training, renewable resources management, electronics and telecommunications, as well as a variety of training and apprenticeship programs for tradesmen.

Training in a variety of nautical and exploration-related activities is offered at Tuktoyaktuk in conjunction with a private company, Dome Canmar. Nursing assistant courses are also available at Yellowknife and Inuvik hospitals, and an eastern Arctic campus of the Fort Smith college has been established at Frobisher Bay, where teacher education, academic upgrading and business procedures are offered to students from Inuktitut-speaking communities. Many NWT students take specialized trade courses or higher education outside the territories, and bursaries are awarded to university students and those attending technical schools in the provinces.

In the Yukon, Whitehorse has three junior high schools, one senior high school, one primary school and five elementary schools. Rural communities all have rural schools extending from kindergarten to grade seven, eight, nine or ten and a regional high school within a reasonable distance from their home community.

Yukon College in Whitehorse offers programming which ranges from academic upgrading through trades and technical to business administration and university transfer. Approximately 850 students recently participated in full-time programs, while 900 were involved in part-time programming. Community learning centres are located in a number of rural communities and a mobile unit provided introductory small engine repair training in three communities recently.

The Government of Yukon, through grants and loans, also assists Yukon students attending post-secondary institutions outside of Yukon. Approximately 350 grants are awarded annually and about 200 certificates of eligibility for Canada Student Loans are distributed.

3.6 Economic Features

The native residents of the North have now entered almost every occupational and economic stratum of Canadian society as it exists in northern Canada. There are native businessmen who own and operate large private businesses and others who manage co-operatives, municipal budgets and sophisticated management tasks in transportation, communications, regional organizations and so on.

Due to the relative newness of the formal educational system in much of the Arctic, there are few practitioners trained in professional fields requiring lengthy formal education. Those fields which have less rigid requirements for training programs (e.g., aviation, health or teaching auxiliaries, mechanical trades) have attracted many entrants.

One characteristic of the northern workforce is the diversity of occupations an individual may successively experience over a span of years. This characteristic is found in other economically marginal areas of Canada and the world, since it allows adaptation to the unpredictably changing economic conditions in frontier and marginal areas subject to either development or depression. It also reflects the preference of most members of the adult workforce, as they value personal freedom and operate in a society which values individual autonomy. In a wage employment situation these values can be well expressed by occasional job changes.

Another reason why the native people favour the persistence of "mixed" adaptation is that hunting and fishing activities continue to be important to them despite their increasing degree of involvement with a cash and wage employment situation. Indeed, the non-economic benefits contributed to their society by renewable resource harvesting may have greater significance than the economic value. This preoccupation with hunting persists even in salaried workers with 40- to 48-hour workweeks living in predominantly non-native northern communities.

It is one of the ironies of the new dependencies created by recent technological change in the North, however, that the greater the orientation of the individual toward hunting and associated activity, the greater the need for cash inputs, most often attainable only through non-traditional employment in the wage employment sector of the economy. Trapping has until recently been the prevailing means of obtaining cash needed to pay for imported goods, which include the necessary goods of production such as guns, ammunition, iron tools, snowmobiles, boats and traps. Relatively few trappers can earn enough cash to pay the high cost of today's required technology. Thus, although about $2.8 million in fur was harvested by NWT trappers in 1982-83, only 26 trappers (out of 3,167) received incomes in excess of $8000 from their five months of trapping activity. In Yukon, trapping contributes about one million dollars to the economy through sale of skins.

It should be realized, however, that many of the smaller native communities are made up of individuals related by kinship and other ties which greatly facilitates sharing of resources, whether these are equipment, food, cash or other essentials. This cooperation enables individual households to operate with less than optimal amounts of cash during periods when there are limited job opportunities or when other reductions in the self-sufficiency of individual households might, under other circumstances, produce welfare dependency. Indeed, in recent years many native communities in the North have reduced the need for social assistance payments by reviving mutual-aid institutions which operated traditionally, but which were eclipsed during the period immediately following the formation of large permanent settlements in the 1950s and 1960s.

The largest employer in the North is government, especially territorial and municipal government. The vast majority of local government positions in the smaller native communities are filled by local residents. About 27 per cent of the 2800 Government of the NWT personnel are native northerners.

As of December, 1983 there were 38 active co-operatives in the NWT. Permanent employment was around 350 people in 1982, not counting casual employees and fishermen (for a total payroll of about $3.5 million); the vast majority of employees are native people.

3.7 The Arts

The growth in production and appreciation of art in its various forms is one manifestation of the reawakening of cultural and ethnic pride which native people in the North have experienced in recent years. The skilful development of the Inuit soapstone carving market in the 1950s and the graphic print market in the 1960s has resulted in the growth of an art industry in the North. This has brought significant economic benefits to a large number of people and international recognition to Inuit artists.

In addition to the widespread production of stone and ivory carvings throughout the North, several Inuit communities are now acknowledged centres for fine art printmaking. The earliest centre to be established was in Cape Dorset, NWT (in 1959), followed by Povungnituk, PQ (1962), Holman, NWT (1965), Baker Lake, NWT (1970) and Pangnirtung, NWT (1973). Most recently, Clyde River, NWT, has begun printmaking, especially on textiles. Other media in which Inuit artists work include applique wallhangings (at Baker Lake, NWT), weaving (at Pangnirtung, NWT) and fashion design and sewing/embroidery (at Spence Bay, NWT).

The art forms of the Dene are equally appealing, whether moose-hair tufting, porcupine quill embroidery or beadwork, often in colourful geometric or floral designs. Dene people use natural dyes in their artwork. Many of these designs were traditionally incorporated into footwear and clothing, especially ceremonial attire.

Both Inuit and Dene people dance and have a musical tradition, the latter based on the drum. In general, the Inuit dance is a solitary event, the dancer providing his or her own accompaniment on a hand-held drum; however, the Inuit of the Mackenzie Delta region perform a group dance with musical accompaniment provided by drummers who remain seated. Dene drumming is also provided for dancers. In both cases singing or chanting by the drummers accompanies the dance. In parts of the eastern Arctic throat-singing, performed by women, is gaining an appreciative following.

Modern musical instruments are now used in the North and accordian and fiddle music often set the pace at community dances. Younger musical artists often sing humorous or satirical ballads or laments, accompanying themselves on electric guitars. Several "groups" have developed, playing rock or modified country and western. Festivals such as Folk on the Rocks in the western Arctic and the Northern Quebec Music Festival are now annual events.

Many of the northern artists appearing at these festivals also perform at concerts elsewhere in Canada and through their records have gained appreciative followings overseas as well as throughout the North. Popular songwriter-performers include Etulu Etidlooie, Charlie Panigoniak, Mark Papigatuk, William Tagoona and William Thrasher.

Northern filmmaking is a developing artform, especially since the establishment of the Native Communication Society in the western Arctic regions and the Inuit Broadcasting Corporation (IBC) which, in cooperation with Taqramiut Nipingat Inc. of Salluit, Northern Quebec, produces television broadcast programming for the central and eastern Arctic regions. In addition to native-run TV production facilities in Baker Lake and Frobisher Bay, IBC also has film units operating out of Cambridge Bay, Eskimo Point and Igloolik. An independent filmmaking group, Nunatsiamiut, operates in Frobisher Bay producing film for TV and general distribution.

While it is the native expressions of art which receive most publicity, occasional touring companies bring non-native art in the form of dance, music or, rarely, theatre to northern audiences.

There has been considerable growth in the publication of the works of native northerners since the appearance of the autobiographies of the Mackenzie Delta resident Nuligak and Keewatin resident John Ayaruaq in the 1960s. In the decade following, Inuit authors whose books have been published include Norman Ekoomiak, Minnie Aodla Freeman, Alice Masak French, Peter Pitseolak, Markoosie, Nick Sikkuark, Armand Tagoona and Anthony Apakark Thrasher. Many others have contributed material to the various periodical publications which include *Inuit Today, Inuktitut, Ajurnarmat/Ajurnangimurat* and *Taqralik*. This increase in publishing has also resulted in some northern artists' work becoming well known through the medium of book illustrating, for example, Germaine Arnaktuayok, Alootook Ipeelie, Agnes Nanogak and Sorosilutu Ashoona.

3.8 Social Change

The most noticeable change in the North over the past twenty years has been the growth and development of permanent communities. The move from the small, family-centred camps on the land into permanent settlements situated at trading posts and churches started gradually, accelerated after World War II and was almost completed by the mid-1960s. The reason often given for the move into settlements was to enable children to attend the schools opening at permanent settlement sites and to bring the people to the places where government (including health and welfare) services were administered. These changes were taking place at a time when the fur trade was in decline and TB was the scourge of the North. It was, therefore, a period of insecurity and of great uncertainty. At times ten per cent of the population was away at distant sanitoria for extended periods. Results of these changes were a loss of confidence in the historic ways of making a living and coping.

The new settlements were administered by government personnel, and native leaders were no longer seen as leaders in the new communities. The first settlement councils were purely advisory, and had little effective say in the direction or administration of the new communities.

By the 1970s, however, community councils began to undertake certain administration duties, such as administering local housing. Co-ops, a growing movement since their inception in 1959, provided important management experience. Thus, the people began to assume a greater degree of control over programs affecting the quality of life in their own communities. Responsibility for game regulations, economic development projects, community services and municipal planning carried over to a greater degree of involvement with the affairs of the territorial governments which increasingly administered former federal programs over a larger area of responsibilities.

These changes have not been without adjustment problems for the people affected. Schools, while imparting new skills, may also impart different value orientations from those of the home environment, and many of the modern influences appear to the young to devalue earlier ways of doing things. The period of rapid social change, in the 1960s especially, was therefore a traumatic time for many individuals and families. In consequence, for the first time in the North, particularly in the larger communities, policemen were regularly involved in work familiar to their colleagues in urban centres in southern Canada. Much of the "crime" was committed by young offenders, often abuse of property and alcohol-related crimes, but also acts of desperation, such as suicide or assault.

Problems are now more likely to be associated with those areas over which the native people feel they have little control, areas where they have, in fact, not yet entered, such as the political or decision-making levels of administration. Thus, dissatisfaction is often expressed over the educational and health delivery systems, over land use practices (particularly by industry), and over game and fishery management problems. Federal and territorial governments now understand the importance of meaningful consultation on most matters affecting native people in the North, but in some situations the absence of explicit policies or effective programs prevents satisfactory resolution of persistent or recurring problems. It is this continuing situation which provides the major rationale for comprehensive land claims being made by the northern native people.

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4.0 History

4.1 Prehistory

Radiocarbon dating of bone artifacts found in recent years at Old Crow Flats in northern Yukon indicates that man lived there approximately 25,000 to 30,000 years ago. This is the oldest find which can be substantiated in the Americas and it may mark a route along which immigrants, originally from Asia, penetrated to the south between the ice sheets to the east and west. The next evidence of occupation in the North was gathered by the Rescue Archaeology Programme of the Archaeological Survey of Canada. Work at the Bluefish Caves site in the Porcupine basin of the northern Yukon has provided paleoenvironmental, chronological and cultural data indicating that the uplands located to the south of glacial lakes Old Crow and Bluefish were exploited by human groups as early as 18,000 years ago. By 15,000 years ago man had spread through what is now Yukon and the country west of the Mackenzie River. These people may have been strongly influenced by more recent immigrants from Asia, bringing many of the characteristics of the Athapaskan Indians who live today in the Northwest Territories and Yukon.

East of the Mackenzie, people from the south seem to have moved about 8000 years ago to the edge of the tree-line, which was then farther north than it is now. They developed a culture based on hunting caribou, known as the Northern Plano tradition, which may be related to the later Shield Archaic tradition, which in turn may be ancestral to the northern Algonkian Indians.

The tundra north of the tree-line in Canada was probably uninhabited until about 4500 years ago, when a culture from the west, belonging to the Arctic Small Tool tradition, appeared in most of the Canadian Arctic. By about 500 BC this had evolved into the Dorset culture, which had a richer variety of artifacts and which flourished for nearly 1500 years. The Dorset people were displaced by a new wave of immigrants from Alaska which, about 1000 AD, began to spread throughout the Canadian Arctic. The people of this culture, which has been named the Thule culture, had superior tools and techniques, lived largely by hunting big whales, spoke the Inuktitut language, and were the ancestors of the Canadian Inuit of today.

While the Thule people were moving east into the Canadian Arctic, the Norse settlers in Greenland were investigating the land to their west. The Helluland described in the sagas relating the Vinland voyages was in all probability somewhere along the east coast of Baffin Island. The Thule people and the Norse certainly met in Greenland, and material of Norse origin found at several sites in the eastern Canadian Arctic shows that the Inuit there had some contact with them, though it may not have been direct.

4.2 Exploration

Credit for the exploration of the northern territories properly belongs to those native people who first penetrated the North. They not only discovered the country but also learned how to live on the resources they found there. The much later European exploration began with the search for a north-west passage to the Orient. Martin Frobisher led the way in 1576 when he reached Baffin Island and, though he himself was diverted by the belief that he had found gold ore there, the search for a north-west passage was taken up by John Davis, Henry Hudson, Thomas Button, Robert Bylot, William Baffin, Luke Foxe and other adventurers who in the next half-century determined the main features of Hudson Bay and the shores of Baffin Bay and Davis Strait.

The Hudson's Bay Company was established in 1670, and for the next hundred years exploration was directed toward the rich fur country south of the 60th parallel of latitude, apart from voyages along the west coast of Hudson Bay as far as Repulse Bay. The only parts of the NWT to be affected by exploration, trade, or the fighting between English and French were the islands in James Bay and Hudson Bay, especially Charlton Island, which was used by the fur trade as a depot for supplies brought in by sea from Europe. In 1769, however, Samuel Hearne set out from Churchill on his first attempt to reach the Coppermine River and on his third attempt he succeeded in reaching Bloody Falls and the nearby Arctic Ocean. The next important journey was carried out by the rival North West Company in 1789, when Alexander Mackenzie travelled by canoe down the river which now bears his name to reach the Arctic Ocean — not, as he had hoped, the Pacific.

After the conclusion of the Napoleonic Wars, the search for a north-west passage was resumed by the Royal Navy. In 1818, John Ross entered Lancaster Sound, but reported that it was closed by mountains. Next year W.E. Parry, who had been second in command to Ross, re-entered Lancaster Sound and sailed as far west as Winter Harbour on Melville Island. Ice prevented him from completing the passage, but he wintered safely and then, as the ice to the west remained impenetrable the next summer, he returned to England. On his next expedition in 1821, Parry entered Hudson Bay and Foxe Basin, wintered at Winter Island off Melville Peninsula, and continued north, but he was unable to get through Fury and Hecla Strait, forcing him to winter at Igloolik. Next summer ice conditions remained bad and he returned to England. On his third north-west passage attempt he wintered on north Baffin Island, but had to abandon his mission the next summer when one of his ships was driven ashore at Fury Beach on the east coast of Somerset Island.

Meanwhile, John Franklin was sent twice by the British Admiralty to travel overland to the shores of the Arctic Ocean. On his first journey he covered the coast from the Coppermine River east to Point Turnagain on Kent Peninsula, and on his second he travelled west from the Mackenzie Delta to Return Reef, west of Prudhoe Bay in Alaska, while Richardson went east from the Mackenzie Delta to the Coppermine River.

Interest in the Arctic remained high for the next decade, when the most notable achievements were John Ross's expedition which entered the Gulf of Boothia, when the North Magnetic Pole was located; George Back's journey down the Back River to the sea; and the exploration of most of the rest of the Arctic coast by Peter Dease and Thomas Simpson. Farther west, Robert Campbell of the Hudson's Bay Company ascended the Liard River in 1840 and crossed the watershed to discover the Pelly River; during the next twelve years he was responsible for the original exploration of much of the Yukon Territory.

In 1845, a major naval north-west passage expedition sailed under Franklin and entered Lancaster Sound. When it failed either to return or to reach the Pacific, the search for a north-west passage became secondary to the search for the missing ships, and numerous expeditions took part in this quest. By 1857, M'Clintock discovered records on King William Island showing that Franklin's ships had been abandoned there. By that time the north-west passage had been found but shown to have no value as a route for contemporary naval or merchant ships, many of the islands of the Canadian Arctic Archipelago had been explored, and John Rae had completed the exploration of the arctic coast of the mainland.

The next major arctic expedition was George Nare's North Polar Expedition which in 1875-76 explored the north coast of Ellesmere Island. From 1898-1902 Otto Sverdrup, a Norwegian, made much more extensive discoveries, including Axel Heiberg Island and the Ringnes Islands, and explored the west coast of Ellesmere Island. The first man to take a ship through the north-west passage was Roald Amundsen, another Norwegian, from 1903-06. During the Canadian Arctic Expedition, 1913-18, Vilhjalmur Stefansson discovered Brock, Borden and Meighen islands to complete the outline of the Queen Elizabeth Islands. The few remaining gaps in the map were completed by smaller expeditions before World War II and by post-war Royal Canadian Air Force air photography.

4.3 Development up to World War II

4.3.1 Yukon

The early European exploration of Yukon was a by-product of the expansion of the fur trade, but by the end of the nineteenth century the attention of the world was drawn to the territory for a very different reason. Prospectors from northern British Columbia had been moving farther north in their search for gold, and in 1898 exceptionally rich placer gold was discovered in Bonanza Creek, which runs into the Klondike River, a tributary of the Yukon River. The resulting gold rush brought tens of thousands of people into the North, especially from the United States and southern Canada. By the end of the century Dawson City, with a population of 25 000, had become the largest city in Canada west of Winnipeg. This was more than the population of the whole territory today.

The richest placers were worked out in a few years and the gold rush quickly faded, but it left two important legacies. One was the White Pass and Yukon Railway, which runs from tidewater at Skagway to Whitehorse on the Yukon River, providing much easier and more direct access to Yukon from the south than the former route by ship to the Bering Sea and then by paddle steamer up the Yukon River. The other was the Yukon Territorial Government, with a fully elected council responsible for legislation and a commissioner, appointed by the federal government, directing a territorial public service. Yukon had also become a federal constituency. Gold mining survived, owing to rationalization of claims to allow the use of hydraulic plants and dredges on low-grade and reworked properties, but production was much lower. There were also sporadic attempts to mine copper, silver and lead. By the outbreak of World War II, however, the total population of the territory had fallen below 5 000.

The gold rush had produced little to benefit the Indians, while introduced diseases and the disruption of their social life had halved their numbers.

4.3.2 NWT

The fur trade closely followed, and sometimes preceded the explorers in the NWT south of the tree-line. The Indians brought the fur they trapped to trading posts to exchange for firearms, knives and other necessities, and fur long remained the only significant export. There was little interest in non-renewable resources and the only transportation route in the interior was the Mackenzie River, slow, expensive to navigate and seasonal. However, the discovery of oil by Imperial Oil at Norman Wells in 1920 initiated a short-lived surge of activity in petroleum exploration along the valley, which was followed by extensive mineral prospecting, made much easier by the development of bush flying. Mining of pitchblende, discovered at Great Bear Lake in 1930, and then of gold, discovered in the Yellowknife Bay area of Great Slave Lake in 1933, began in the years immediately before World War II and provided a convenient market for Norman Wells oil.

In 1933, the Eldorado Mining and Refining Port Radium Mine on Great Bear Lake began production of uranium concentrates containing radium. Consolidated Mining and Smelting Company milled its first gold ore from the Con-Rycon mine at Yellowknife in 1939; owing to a labour shortage the mine was closed in 1943 and was not re-opened until 1946.

There was little to attract the fur trade north of the tree-line. Here, it was the whalers who sailed in the wake of the exploring ships. By 1820 they had entered Lancaster Sound and the whale fishery soon spread down the east coast of Baffin Island. In 1860, commercial whaling began in Hudson Bay, but by the end of the century the industry was in decline owing to over-exploitation, the introduction of mineral oil and the availability of substitutes for baleen. Whalers from Alaska did not penetrate into Mackenzie Bay and Amundsen Gulf in the western Arctic until toward the end of the century. In 1889, the first steam whaler reached Herschel Island on the Yukon coast, and within 25 years the industry had run its course. Several whalers had established year-round stations in the Arctic, where they carried out some trading with the Inuit. This was not very successful, but white fox fur was becoming popular and the fur trade moved in as the whalers withdrew. As in Yukon, the early contacts of a native population with no immunity to many diseases prevalent in the south were disastrous.

Unlike Yukon, the NWT was governed by Ottawa during this period; the position of Commissioner was filled by the Deputy Minister of the Interior and all members of the NWT Council were federal civil servants.

Administration of the North, and there was little of it, was conducted through the Northwest Mounted Police posts scattered throughout the territories.

4.4 World War II and Subsequent Defence Activities

World War II had a dramatic effect on the North, awakening the NWT from its long slumber and alleviating the disruption left in Yukon by the gold rush. It began in a small way with the need for meteorological information for weather forecasting, a need so important that the Germans established secret weather stations in Greenland and northern Labrador.

The entry of the US into the war, however, led to activities on a scale which must have seemed incredible to the native inhabitants of the North. In the west, there was the chain of airfields which formed the Northwest Staging Route for the delivery of aircraft to the USSR, the Alcan Highway built to connect them and the Catel telephone line to provide communications. There was also the Canol project, which included development of the Norman Wells oilfield, greatly improved communications along the Mackenzie Valley, pipelines between Norman Wells and Whitehorse and from Whitehorse to Haines, Watson Lake, and Fairbanks, and a refinery at Whitehorse. In the east, the Crimson Staging Route was built through Baffin Island and Greenland to ferry aircraft to Europe and casualties to America. Though gold mining declined, the pitchblende at Great Bear Lake acquired a new and devastating importance.

The war brought large numbers of US servicemen and civilians into the North, and in many areas they greatly outnumbered Canadians.

The Cold War meant new major defence projects, including weather stations in the Queen Elizabeth Islands, a Low Frequency Loran chain, a pipeline from Haines through Yukon to Fairbanks, the Distant Early Warning (DEW) Line, Strategic Air Command air refuelling bases and communications for the Ballistic Missile Early Warning System. These defence activities gave to the North airfields, roads, communications, navigational aids and other infrastructure much earlier and of a much higher standard than could have been justified by civil needs, though not always in the places civil needs would have indicated.

4.5 Development Since World War II

4.5.1 Yukon

The war reversed the decline in the population of Yukon which had followed the gold rush. Improvements in communications, and particularly the highway from the south, brought prospectors and mining companies back into the territory. Ore bodies which had been marginal became profitable; copper was again mined at Whitehorse and production of lead and silver near Mayo was expanded. The Alaska Highway, as the Alcan Highway was renamed, increased the importance of Whitehorse as a transportation centre. An asbestos mine at Cassiar in northern BC trucked its fibre out to Whitehorse and then down the railway line to Skagway. Tungsten concentrates from Flat Creek in the NWT were also trucked to and along the Alaska Highway, and a large asbestos mine at Clinton Creek near Dawson was in production for several years before its ore was exhausted. By far the most important development, however, was the lead-zinc property at Anvil, 290 km north of Whitehorse. The value of its production soon exceeded that of all the rest of the territory and Faro, the town built to service it, quickly became the second-largest community in the territory.

Dawson, bypassed by the Alaska Highway, was little affected by these new activities and the fixed price for gold ensured its continued decline. The transfer of the territorial government from Dawson to Whitehorse in 1953 was inevitable.

The devolution of administrative authority to elected representatives was, however, slow and gradual until 1979, when the Minister of Indian and Northern Affairs Canada instructed the Commissioner to hand over many of his powers and responsibilities to the Executive Council of the territory.

4.5.2 NWT

In the NWT, in contrast to Yukon, production of gold increased after World War II and for many years gold and uranium, both of which are easy to transport, were the only significant exports. The main economic stimulus was provided by defence activities and government construction of schools, nursing stations and especially the new town of Inuvik, built to replace Aklavik as the administrative centre for the Mackenzie Delta. A highway was built to Hay River from the south, but it required the completion of the parallel railway in 1964 to bring Pine Point, a long-known major lead-zinc property, into production and this still remains one of the largest mines in the NWT.

During the 1950s, the petroleum possibilities in the Arctic Islands began to be recognized. Exploration and drilling was carried out before the discovery of a major field at Prudhoe Bay on the arctic coast of Alaska gave tremendous impetus to the search for petroleum throughout the North. There have been many disappointments, but large gas fields have been located in the Sverdrup Basin and the Mackenzie Delta, and interest is now centred in the Beaufort Sea, which has shown good promise of substantial reserves of oil.

In 1944, Eldorado Mining and Refining became a Crown Corporation and the Port Radium mine began production of fissionable uranium for the war effort (Manhattan project); the mine was then closed in 1960 and subsequently operated between 1976 and 1981 as a silver mine by Echo Bay Mines Ltd. Giant Yellowknife Mines Ltd. at Yellowknife began gold production in 1948; it has continued to be a major gold producer. At Rankin Inlet on the west coast of Hudson Bay, nickel-copper concentrates were produced from 1957 to 1962. The Nanisivik lead-zinc mine on Strathcona Sound on northern Baffin Island began production in 1977.

The Cullaton Lake gold mine near Cullaton Lake in southern Keewatin District began gold production in October, 1981. Echo Bay Mines' Lupin Mine at Contwoyto Lake in northeast Mackenzie District began gold production early in 1982. The Polaris lead-zinc mine on Little Cornwallis Island began production in January, 1982.

Both the Nanisivik and Polaris mines are on tidewater, where transportation is relatively cheap, though seasonal.

These economic developments have not affected the native population to a large extent, but the provision of education, health, housing and other social services has had far-reaching repercussions. The native population has increased rapidly and has moved from small camps based on hunting to the larger settlements where these services can be obtained. Their standard of living has improved greatly but the magnitude and speed of change have brought major social problems.

Constitutional change has also been rapid. The appointed members of the Executive Council of the NWT have been replaced by elected members, the seat of government has moved from Ottawa to Yellowknife and elected members now head various departments of the territorial government. The NWT has also gradually achieved representation in the federal parliament, to which it now elects two members.

An important development in recent years has been the formation of native organizations with the goals of defining and defending what they consider to be their rights. Land claims and new political boundaries and structures have become dominant issues throughout the North.

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5.0 Native Organizations and Land Claims North of 60°

5.1 The Recognition of Native Claims

5.1.1 Background

Indian and Inuit people have occupied and used land in Canada for many centuries. Comprehensive native claims arise where this traditional land use and occupancy, or "aboriginal interest", has never been dealt with by treaty or other means. British colonial policy, and subsequently Canadian government policy, has generally recognized the existence of an aboriginal interest in the land, which had to be dealt with before non-native settlement could take place. Translated into practice, the policy resulted in the making of treaties with the various Indian tribes, first in Upper Canada and later the numbered treaties in Ontario, the Prairies, northeastern B.C. and the western sub-Arctic.

Two treaties were made in the North. Treaty 8, signed in 1899, covered the area south of Great Slave Lake and east of the Hay River (as well as parts of present-day northern Saskatchewan, Alberta and British Columbia). Treaty 11, signed in 1921, included all the rest of the Mackenzie Valley in the NWT, as well as part of the western Arctic coast and the southeastern tip of Yukon. No further treaties were concluded in the North after 1921, even though much of the territorial North had not yet been included (specifically, most of Yukon, the Arctic Islands, the central Arctic coast and the Keewatin district). No treaties were ever concluded with the Inuit.

Although the terms of Treaties 8 and 11 provided for reserve allotments, only the Salt Plains Reserve No. 195, created in 1941 and the Hay River Indian Reserve No. 1, created in 1974, were subsequently set aside. The federal government appointed a commission in 1959 to investigate the unfulfilled land provisions of the treaties in the NWT. The commission viewed reserve allotments as outmoded and recommended a re-negotiation of the treaties to provide for outright ownership of small household plots, compensation for lands lost and a percentage of Crown revenues from oil, gas and mineral developments. No action was taken on these recommendations. The Dene Nation, however, representing Indians in the Mackenzie Valley, considers the treaties to be treaties of peace and friendship and not surrenders of land. They have pressed for a land claim settlement. The government, while maintaining that the treaties effected a surrender of aboriginal title, has agreed to negotiate a comprehensive settlement on the grounds that the provisions of the treaties have not been fully implemented.

The twentieth century, and especially the post World-War II years, brought great changes to the material conditions of life among native northerners and to their economy. Although trapping has declined as the principal means of obtaining income, and while wages and government assistance have become more important, hunting, trapping and fishing have remained essential to the household economy and to social and cultural life. Most native northerners continue to identify their interests very strongly with the land. The rush of proposals in the 1970s, therefore, for major developments such as a gas pipeline and a highway in the Mackenzie Valley, and the accelerated exploration for oil, gas and minerals in many parts of the North, were interpreted by many native people as a threat to their well-being and security. Local opposition in diverse native communities and the reaction of newly formed regional native organizations in the North frequently attracted the attention of national media.

This opposition to development projects coalesced rapidly around a central demand for a settlement of land claims. Other events hastened the process. One was the reorganization and revitalization of national and regional native organizations, beginning about 1968. Government funding for these organizations, at first for specific projects and subsequently to assist in the maintenance of the organizations themselves (core funding), was made available beginning in 1970. Regional native organizations were soon formed and funded in the NWT and Yukon.

Seven native organizations were formed north of 60°N between 1968 and 1982. In Yukon, there was the Yukon Native Brotherhood and the Yukon Association of Non-Status Indians, which for the purposes of claims negotiations later formed a common organization, the Council for Yukon Indians. In the NWT, there is the Dene Nation (formerly Indian Brotherhood of the NWT), the Metis Association of the NWT, the Committee for Original Peoples' Entitlement (COPE), the Tungavik Federation of Nunavut (TFN) representing Inuit claims and territorial constitutional positions in the NWT and the Inuit Tapirisat of Canada (ITC) providing national representation for the Inuit. ITC functions as the national organization of the Inuit of Canada, with a head office in Ottawa. ITC was also responsible for negotiating the land claim in the eastern NWT on behalf of three regional Inuit affiliates in the central and eastern Arctic formed in the late 1970s. Since Autumn, 1982 the negotiations have been conducted by the Tungavik Federation of Nunavut, which was formed specifically for that purpose.

Other factors behind native land claims in Canada include the passage of the *Alaska Native Claims Settlement Act* by the US Congress in 1971, followed in 1973 by three important court judgments — the Calder case in British Columbia (Nishga assertion of native title); the Malouf judgment in Quebec (interlocutory injunction in James Bay development); and the Morrow judgment in the NWT (Caveat case). These three cases gave a measure of support to the native population on aboriginal land rights.

Native people in the North are determined that they shall not only have a voice in what is happening on the economic development front but that they shall have the opportunity to participate in whatever development is taking place. They consider that claims settlements are a principal means through which such influence and participation shall be effected. Meaningful and influential involvement in land management and planning and the control of considerable areas of land are seen as contributing to this goal. With the lands and funds to be provided for in the settlements the claimant groups in the North are making plans for becoming major players in resource development. Some are already taking advantage of claims-related loans to begin engaging in investment and business enterprises in mining, tourism and other areas.

The native people however, are not willing to achieve economic development at the cost of destroyed homelands, cultures and lifestyles. They are concerned about environmental protection and the wisdom of sound land management and planning. They also wish to see wildlife properly managed and want to be closely involved in such management. In short, they insist that claims settlements provide for both economic development opportunities and the preservation of traditional pursuits according to their own choices.

5.1.2 Native Claims Policy

The federal government's response to these developments led to the 1973 Statement on Claims of Indian and Inuit People which recognized two broad classes of native claims: comprehensive claims, based on the notion of aboriginal title; and specific claims, concerning grievances of particular Indian bands about the Government's administration of Indian lands and other assets under the various Indian Acts and those claims which might exist with regard to the actual fulfillment of Indian treaties. To date, all claims in the North have fallen within the comprehensive claims category.

5.1.3 Provisions of Comprehensive Claims Policy

It is the federal government's view that claims negotiations should result in compensating native people for the loss of their traditional interest in the lands concerned, and should result in effective native involvement in the future of the region. Claims settlements aim at exchanging undefined aboriginal title for concrete rights and benefits, guaranteed by legislation. It is the government's intent that the settlements be final, precluding the possibility of future claims based on aboriginal title.

The Government envisages several areas of benefits which might flow from the settlements including land, money, access to resources and direct roles in northern land and resource management regimes.

Land

Lands selected by natives for their continuing use should be traditional land which they currently use and occupy. At the same time persons of non-native origin who have acquired, for various purposes, rights in the land in the area claimed are equally deserving of consideration; their rights and interests must be dealt with equitably.

Other basic access rights must be taken into consideration, subject to fair compensation as mutually agreed either through negotiation or arbitration. They include: rights of access for transportation routes within and through a settlement area; rights of way for necessary government purposes; rights of access to holders of subsurface rights for exploration, development and production of resources.

Similarly, special protection must be ensured against unlimited expropriation of lands granted in settlement. Meaningful and influential native involvement in land management and planning decisions on Crown lands could be initiated and strengthened by providing membership on those appropriate boards and committees where decisions affect the lives of their communities.

Where natives use land lying in more than one jurisdiction, and in the event that this use cannot be continued through mutual agreement among the competing parties, compensation may be paid or specific wildlife harvesting rights granted, subject to the general public laws existing within the area in dispute.

Even where jurisdictions are not at issue, some lands are used by more than one native group. Where this sort of overlapping exists and where there appears to be no ready agreement among the different users, some appropriate and timely means must be found to resolve the differences. Until this is done, no land in these areas will be granted.

Again, the motive for approaching land selection in this way is to protect the rights of Canadians, native and non-native alike, who might be affected by the settlement. Furthermore, it is designed to encourage native people to participate actively in the fair and equitable negotiations surrounding these decisions.

Wildlife

In addition to providing for rights to hunt, fish and trap, the comprehensive claims settlements provide for the involvement of native people in a broad spectrum of activities affecting the whole area of wildlife. This may include, for example, fuller participation in wildlife management, such as making recommendations to the government on the establishment and maintenance of wildlife quotas or providing advice on the formulation of management policies and other related matters.

Generally, the settlements may provide for prescribed preferential rights to wildlife on Crown lands. Exclusive rights would be limited to fee simple or the equivalent native lands or to specified species elsewhere. All areas, whether they include those for exclusive native use or those shared by the general public, will continue to be subject to the existing general laws as they apply to hunting, fishing and trapping; they will be further subject to present and future sound conservation policies and public safety measures.

In any event, the settlements will clearly define the terms on which native people will have access to wildlife resources on Crown lands. Any exceptions to the laws which generally apply to these areas will be clearly outlined, again taking into consideration any rights acquired by non-native users.

Subsurface Rights

The federal government is prepared to include subsurface rights in comprehensive land claim settlements in certain cases. The motive for granting such rights is to provide native people with the opportunity and the incentive to participate in resource development. In addition, granting subsurface rights close to communities and in critical wildlife habitat areas would be a protective measure designed to eliminate any possibility of granting resource development rights to any prospective developer in conflict with the wishes of a local community.

Monetary Compensation

Monetary compensation can take various forms, including cash, government bonds and other forms of debentures. But no matter how these capital transfers take place, the amounts negotiated must be specific and finite. As to when payments should be made, negotiations would be tailored to meet the needs of various native groups and government.

Other Provisions

One of the mutual goals of comprehensive land claims settlements is to give the beneficiaries control over their own affairs. With this in mind, the Government recognizes that native-controlled institutions will be established to facilitate the lasting participation of all the beneficiaries of the settlement. These entities will be designed, staffed, and their decisions implemented primarily by native people; they should protect and enhance their assets through sound management practices.

All compensation monies to be paid under proposed settlements will be regarded as capital transfers and will be exempt from all taxation. However, incomes derived from such compensation shall be subject to the usual provisions of the Income Tax Act. Except in relation to municipal services, unimproved lands may be exempted from property taxation.

Unless agreed to by the parties, proposed settlements will not diminish the eligibility of beneficiaries to current and future programs for native people. Access to such programs will be in accordance with the then current criteria.

It is not intended that new indeterminate programs geared solely to natives be provided by the federal government in settlements. Nevertheless, it is possible to refocus normal government resources to enhance the efficiency of existing programs and to achieve mutually agreed upon ends.

Although some forms of self-government at the local level may be included in the terms of settlement, the federal government does not view the claims process as a proper forum for political and constitutional development, because all citizens affected must be involved. It is also the Government's view that, despite the desirability of settling outstanding claims early and expeditiously, controlled resource development need not be delayed so long as they neither prejudice nor precipitate the claims settlement.

5.2 The Claims Settlement Process

5.2.1 Funding of Native Claimants

In 1969, the federal government began funding native groups and associations to enable them to conduct research into treaties and Indian rights. Later, the program was broadened to allow provision of financial support, including contributions and loans, for research, development and negotiation of native claims. Accountable contributions are provided for the purpose of researching, developing and submitting claims to the federal government. Interest-free loans may be made once a claim has been accepted for negotiation by the Minister, for the purposes of further development of the claim, preparation of a negotiating position and actual negotiation of the claim; following the attainment of agreements in principle, interest is charged on the loans. These loans are repayable from the first payments of an eventual settlement. The funding program is currently administered by the Research Branch, Corporate Policy, INAC.

The Claims Funding Program is separate from the core funding of organizations, which is administered by Secretary of State, and from special funding for interventions at public hearings with respect to development impact, which is administered by various government departments including INAC.

5.2.2 Government Representation

In 1974, the Government established, within Indian and Northern Affairs Canada (INAC), the Office of Native Claims (ONC) with the mandate to negotiate the settlement of comprehensive and specific claims. ONC's primary functions are to coordinate the review of claims submitted to the federal government by duly mandated groups and associations, to determine their acceptability, and to represent the Minister and the Government in the negotiation of claims settlements. Although the native claimant groups may decide to pursue their claims in court, the federal government has held that negotiations are the most promising way of reaching equitable beneficial and mutually acceptable settlements.

With regard to the negotiation of comprehensive claims, the Government took the initiative in 1980 of appointing chief negotiators from outside the public service. These people, calling upon a variety of experience, have each been able to bring a fresh and objective perspective to the negotiating table. They have direct access to the Minister of Indian Affairs and Northern Development on a continuing basis and are able to remain in continuing contact with centres of federal decision-making.

Each chief government negotiator is supported by a compact group within the Office of Native Claims. As part of their responsibilities for the management of the federal negotiating teams, these groups provide research, analytical and coordinating services and give back-up assistance during negotiations. Various departments are drawn into the preparation and presentation of positions as required: Justice; Environment; Fisheries and Oceans; Energy, Mines and Resources; Finance; Privy Council Office; Federal-Provincial Relations Office and others. By mutual agreement, the territorial governments are actively involved in negotiations of claims north of 60° as part of the federal teams. Their involvement is particularly important as many of the settlement provisions will fall within areas of territorial jurisdiction, requiring legislation and implementation by the government concerned.

Responsibility for negotiating the settlement of specific claims rests primarily with negotiators within ONC.

5.2.3 Settlement Stages

The settlement process normally follows a series of stages beginning with interim or sub-agreements on discrete topics such as wildlife harvesting and management or land selection. When sub-agreements have been completed for all or most settlement components, they are compiled into an overall agreement-in-principle which is an accord covering the general terms of settlement. This is followed by a final agreement between representatives of the parties in which all provisions of the settlement are spelled out in detail. Ratification is achieved by the claimants through referenda held in the native communities while Government approval is provided by Cabinet. The final stage in the settlement of comprehensive claims is the passage of legislation by Parliament and by provincial or territorial legislatures where concerned, giving affect to the settlement. Implementation rests with the government agencies — federal, territorial or provincial — responsible for the administration of the various aspects of the legislation and with the beneficiaries, according to the terms of the settlement.

Three final agreements have been reached through the comprehensive claims process and proclaimed as law . They are the 1975 James Bay and Northern Quebec Agreement (with James Bay Crees and the Inuit of northern Quebec), the 1978 Northeastern Quebec Agreement (with the Naskapis of Shefferville), and the 1984 Western Arctic Agreement (with the Inuvialuit).

5.3 Comprehensive Claims in the North

5.3.1 Council for Yukon Indians (CYI) Claim

The CYI, representing all people of Yukon native ancestry (approximately 5500), was formed in 1974. It united the Yukon Native Brotherhood and the Yukon Association for Non-Status Indians for the purpose of negotiating their claim originally entitled "Together Today for Our Children Tomorrow" and submitted to the federal government on February 14, 1973. Between 1974 and 1979 a number of attempts were made to reach negotiated settlement of the claim with agreement falling short of achievement in each case.

Renewed and intensive negotiations, begun in 1980 with the appointment of a Chief Government Negotiator, led to the initialling by the negotiator for Canada, the Yukon Territorial Government and the CYI of an overall agreement-in-principle in January, 1984. Negotiations towards a final agreement will follow.

5.3.2 Dene/Metis Claim

There are approximately 8000 status Indians descended from the several Dene tribes and about 5000 non-status Indians and Metis in the Mackenzie Valley area. In 1899, the Indians in the southern area signed Treaty 8 and the remainder signed Treaty 11 in 1921. Half-breed settlements were entered into with the Metis through scrip commissions operating parallel to the treaty commissions. The Dene Nation considers Treaties 8 and 11 to be treaties of peace and friendship and not surrenders of land. The Government, while maintaining that the treaties effected a surrender of title, has agreed to negotiate a comprehensive settlement on the grounds that the provisions of the treaties have not been fully implemented.

In 1976, the Dene Nation submitted a land claim, followed in 1977 by the claim of the Metis Association of the NWT. Prolonged difficulty has been encountered in establishing joint Dene/Metis positions and initiating meaningful negotiations. However, an improved working relationship developed in 1983 with the establishment of a single claims secretariat. During 1983, an interim agreement was reached on eligibility and enrolment. An overlap agreement between the Minister of Indian and Northern Affairs, the Dene/Metis and the Committee for Original Peoples' Entitlement (COPE) was signed on February 9, 1984. Discussions between the Dene/Metis and COPE are continuing towards the implementation of the agreement. There have been recent discussions on Dene/Metis equity participation in the Norman Wells oilfield and on wildlife harvesting and management.

5.3.3 The Inuvialuit (Western Arctic) Claim

The Committee for Original Peoples' Entitlement (COPE), representing approximately 2500 Inuvialuit living in six communities in the Western Arctic Region and originally part of the general Inuit claim, submitted a separate claim in May, 1977, in the light of anticipated pipeline construction in their area of interest. An Agreement-in-Principle was signed by COPE and the federal government on October 31, 1978. It dealt with land, wildlife, financial compensation, eligibility, corporate structures and economic and other measures. In May, 1979, agreement was reached on 85 per cent of the remaining lands over which the Inuvialuit would have surface rights. Negotiations towards a final agreement were interrupted during the May, 1979 and February, 1980 elections and during the ensuing government's review of claims policy. Attempts to resume negotiations were unsuccessful until November, 1982 when a series of meetings culminated in the preparation of an aide mémoire which identified the agreed-upon major elements remaining to be negotiated.

Formal negotiations with the Inuvialuit began on January 20, 1983. There was extensive dicussion of contentious issues arising from the Agreement-in-Principle. A proposed final agreement was initiated by the chief negotiators for Canada and COPE in December, 1983. The final agreement was approved by Cabinet in March, 1984 subject to claimant ratification which was completed in May. Parliament subsequently passed the Western Arctic (Inuvialuit) Claims Settlement Act on June 29, 1984. It was proclaimed on July 29, 1984.

Under the Western Arctic settlement, the Inuvialuit will receive specific rights and benefits in exchange for the relinquishing of their interests based upon traditional use and occupancy. These rights and benefits will include land, cash compensation ($45 million in 1977 dollars), wildlife harvesting and management, economic measures including a $10 million Economic Enchancement fund and Inuvialuit participation on advisory boards dealing with land use planning and environmental management. The Inuvialuit have also signed bilateral agreements with the Council for Yukon Indians, the Dene/Métis and the Tungavik Federal of Nunavut resolving their overlapping interests in the Inuvialuit Settlement Region.

With reference to the relationship of the Western Arctic agreement to territorial interests as a whole, laws of general application relating to private property will apply to all Inuvialuit lands (13,000 square kilometers with full surface and subsurface title; 78,000 square kilometers excluding oil, gas and specified mineral rights).

The Government will continue to regulate the safety of development activities, and will be responsible for environmental management. Inuvialuit lands will remain subject to easements and rights of way which existed as of July 13, 1978. The public will have a right of general access along navigable rivers and the right to cross Inuvialuit lands to reach other lands. While Inuvialuit lands may be leased, they cannot be sold except to other Inuvialuit or to the Crown. In the event Inuvialuit lands are needed for public purposes, they can be so acquired subject to the provision of alternative lands or financial compensation. Inuvialuit lands will be exempt from property tax but improvements, as well as proceeds from development of Inuvialuit lands, will be taxable in accordance to the laws of general application.

5.3.4 Tungavik Federation of Nunavut (TFN) Claim

The Tungavik Federation of Nunavut (TFN), formed in the summer of 1982 to take over the claims negotiation role of the Inuit Tapirisat of Canada (ITC), represents approximately 14,500 Inuit in the central and eastern NWT. The Inuit claim to the area was first presented by ITC in February, 1976 and has since undergone a number of revisions.

Early negotiations resulted in little progress because of debate over establishment of a new territory of Nunavut. Following meetings with the Minister of Indian and Northern Affairs in 1980, the Inuit agreed to proceed with land claims negotiations on the understanding that their aspirations for Nunavut would be dealt with outside land claims. Intensive negotiations got underway in late 1980, resulting in the initialling of wildlife provisions of an agreement-in-principle in October 1981, subject to review by Government and by the Inuit. Some matters in connection with this review remain unresolved.

A government decision in November, 1982 approving the principle of division of the NWT, and consequently the possibl establishment of Nunavut, created a favourable climate for further progress towards a land claim settlement.

In 1983 and early 1984, eleven components of an overall Agreement-in-Principle and two joint position papers were initialled. They included provisions dealing with purposes and principles of Inuit land identification, with parks and conservation areas, and with Inuit employment in government.

A monthly schedule of negotiation sessions is followed, and current discussions focus on land and economic matters.

5.4 Native Organizations North of 60°N

5.4.1 Objectives

The settlement of claims has from the outset been a central concern of every native organization north of 60°N. It has not, however, been the sole function of any of them. Every organization seeks also to preserve and promote the culture and language of its members, to promote greater communication and self-awareness among them, to develop leadership and to represent the political and economic interests of its members in every possible sphere. Native organizations have usually obtained intervenor status at public hearings to assess the impact of major developments, or at regulatory hearings. The intervention of native organizations at the Mackenzie Valley Pipeline Inquiry is perhaps the best known example, but it is now usual for these organizations to make representations in such forums as parliamentary committees, the Canadian Radio-Television and Telecommunications Commission (CRTC), the Canadian Transport Commission (CTC), the National Energy Board (NEB) and the Territorial Water Boards.

Native organizations have worked together with other political bodies or groups, such as the NWT Legislative Assembly and southern environmental interests. They have frequently made common cause with each other, although there is at present no federated body representing the interests of all groups north of 60°N.

The larger organizations now have dozens of people on their payrolls at head office, as well as field staff in various communities. Some maintain regional offices and an Ottawa office. Native organizations have thus become significant employers, especially of native people, although each also employs non-native staff. Native organizations are thus playing a significant role in helping natives develop administrative, clerical and political skills.

5.4.2 Other Developments

The roles and responsibilities of native organizations north of 60°N have become sufficiently diverse that each has created a number of separate organizations or agencies. Some of these organizations, such as regional housing or development corporations, fulfil primarily economic functions. Others are primarily cultural in purpose, and are concerned with communications, the arts, language and so on. Following a settlement of claims, the role of virtually every native organization can be expected to change and to expand.

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6.0 Government

6.1 Territorial System of Government

In their everyday operations, the governments of the territories closely resemble those of the provinces. The area of legislative authority assigned to the two territorial councils practically duplicates that assigned to the provincial legislatures under the *Constitution Act (BNA Act),* the important exceptions being authority over lands and resources (except wildlife) and the power to legislate regarding the territorial constitutions.

The fundamental distinction between provincial and territorial government is the differing source and nature of the territorial constitutions as opposed to provincial constitutions. Provincial constitutions, which define the powers of the legislative and executive branches of government as well as the division of legislative power between the federal and provincial governments, are entrenched in the *Constitution Act* and are not subject to change by the federal government. On the other hand, the territorial constitutions, the *Yukon Act* and the *NWT Act*, are federal statutes, legally subject to change at the will of Parliament.

Within themselves, these Acts contain aspects furthering the distinction. They vest executive authority in federally appointed commissioners who administer the governments of the territories under instructions given from time to time by the Governor in Council or the Minister of Indian and Northern Affairs Canada. Thus, in law if not in practice the commissioners fill two roles: each is the chief executive officer of a territory; at the same time, each is the representative of the federal government, and in this latter capacity can be instructed to follow federal government directives. For instance, the Minister of Indian and Northern Affairs may instruct a commissioner to decline to give assent to territorial legislation. The lieutenant governors in whom executive authority in the provinces is formally vested are also federally appointed, but they are not in practical terms subject to federal direction.

Lieutenant governors represent the Crown within provincial constitutions; a commissioner does not represent the Crown, but merely the federal government. In his or her vice-regal capacity a lieutenant governor is legally bound to follow the advice of the provincial Cabinet, which in turn is responsible to the legislature. While a commissioner may be instructed by the Governor in Council or the Minister of Indian and Northern Affairs to be bound by the advice of the executive council in his or her territory, he or she can also be instructed by the same federal authorities not to be so bound.

This distinction has important ramifications for the level of responsible government existing in the territories. In the provinces responsible government exists to the fullest extent; executive action without exception is dictated by an elected Cabinet, which is in turn responsible to an elected legislature. On a practical basis the situation is almost the same in the territories, but the theoretical possibility does exist that the commissioner may be directed by federal authorities to take executive action contrary to the advice of the executive council.

In 1979, the Commissioner of Yukon was instructed by the Minister of Indian and Northern Affairs to act, essentially, as a lieutenant governor (i.e., to absent himself from the day-to-day affairs of government and to devolve most of his executive functions upon, and to be bound by the advice of, the elected government of Yukon). Since then, to all intents and purposes, the Commissioner has been directed by the wishes of his Executive Council.

Instructions for the NWT have not yet carried the devolution of *de facto* responsible government to quite the same extent. The Commissioner still takes an active part in the government of the territory. However, in 1975 he was directed to seek the advice of his Executive Committee (now Executive Council) and to give that advice the fullest possible consideration. The Territorial Council of 1975 resembled a Legislative Assembly, and so styled itself. A Speaker was chosen by the members, and three elected members were given Executive Committee portfolios. The Executive Committee, which holds Cabinet-like responsibilities in relation to the Territorial administration, had formerly been made up of only the Commissioner, the Deputy Commissioner and the Assistant Commissioner. 1979 saw the election of a new Legislative Assembly enlarged to 22 seats. This Ninth Assembly brought into law a large amount of legislation. The members also lobbied successfully for the inclusion of aboriginal rights in the Canadian Constitution.

Government in the territories also differs from that of the provinces in the legislative sphere. While the legislative powers of the territorial legislatures closely parallel those of provincial legislatures, these powers are devolved by Parliament and can always, legally, be removed. Provincial areas of legislative jurisdiction are entrenched. Territorial legislative jurisdiction, being defined by federal legislation (Yukon and NWT Acts) is always subject to be overridden by contrary federal legislation. The rare practical result of this is that if there is inadvertant conflict between territorial and federal legislation, the territorial legislation is automatically inoperative.

On November 26, 1982, the Minister of Indian and Northern Affairs announced the federal Cabinet's decision to foster greater strength and responsibility in the political institutions of Yukon and the NWT. The new policy renews the federal government's longstanding commitment to responsible government in the territories while stating that provincial status is not a realistic objective in the foreseeable future because of the small population base, vast area, an undeveloped and narrowly based economy and the need of the federal government to protect Canada's national interests.

The federal government is introducing a formula-based approach to providing financial support to the territories to allow improved fiscal planning and enable northern governments to assume full accountability for their budget decisions. To further strengthen the territorial governments and help them deal with the related costs of resource development, the federal government has also committed itself to give the territories a certain level of descretionary revenue.

The *Yukon Act* will be amended as soon as native claims have been settled. It will confirm in law the steps already taken toward achieving responsible government in Yukon. Analagous concrete steps in the NWT must await further resolution of such fundamental issues as division.

In response to the longstanding political aspirations of both native and non-native residents of the NWT the federal government also announced on November 26, 1982 its acceptance in principle of the concept of subdivision of the vast area which presently constitutes the territory. These aspirations had led the NWT Assembly to hold a plebiscite on the issue on April 14, 1982, and a majority of the respondents had voted in favour of division. Federal willingness to ultimately divide the NWT will be dependent upon continued support for division by a majority of its residents, resolution of comprehensive land claims and the achievement of a consensus among citizens of the NWT and agreement with the federal government on the location of boundaries and the distribution of powers between territorial, regional and community levels of government. The NWT Constitutional Alliance, a group formed of representatives of the major native groups and the Legislature and Government of the NWT, will be taking the lead in consultations and deliberations aimed at achieving this consensus.

6.1.1 Territorial Revenue Structure

6.1.1.1 Federal Grants

A new method is being adopted to finance public expenditures for the Northwest Territories and Yukon whiich brings the territories closer to full responsible government. The new approach is based on a fixed tax rate formula which will be tested in a three-year trial period beginning in 1985-86.

Currently the territorial governments receive most of their funding from the federal government by grants negotiated yearly. The fixed tax rate formula involves the indexing of the territorial government base year expenditures (1982-83) by an escalator which is derived from the growth rate of provincial and local expenditures. This amount is then offset by territorial revenues at fixed tax rates which result in the grant level.

Although funding levels under the current system are speculative for 1985-86 a comparison can be made using current year allocations, 1984-85 with formula-based forecasts for the same year.

	NWT (Millions)	Yukon (Millions)
Funding under current process for 1984-85	$384.1	$111.5
Funding using formula based on forecasts for 1984-85	$405.0	$129.0

6.1.1.2 Territorial Tax Base

The major revenue source of the two territories, as indicated above, is a transfer from the federal treasury. This amounts to almost one-half of the territorial expenditure budget in Yukon and 80 percent in the NWT. The remaining revenues come from personal and corporate income taxes, which are now levied directly by the territorial assemblies, other direct taxes such as those on alcoholic beverages, real property taxes and various licences, and fees the territory imposes in the same way a province does.

The remaining portion of the territorial expenditure budget is paid for through the sale of services by the territorial government and the federal share of the same cost-shared programs enjoyed by provinces.

6.2 Structure and Political Development

6.2.1 Constitutional History and Evolution of Yukon and the NWT

In 1870, with the purchase from the Hudson's Bay Company of the land then called the North-West Territories, Canada acquired 70 per cent of its present area. The building of the railroad to the Pacific and the resulting expansion of the Canadian population westward led to the establishment, in the short space of 35 years, of the provinces of Manitoba, Saskatchewan and Alberta, with responsible governments in the parliamentary tradition. Full resource and land ownership was passed to the new provinces 25 years later. The transfer to Ontario and Quebec of the parts of the original North-West Territories which abutted on those provinces was completed in 1912. What remained of the original North-West Territories became the present-day Northwest Territories and Yukon, which comprise close to 40 per cent of the area of Canada.

The Klondike gold rush of 1898 was most important in the early history of Yukon, since the influx of miners and settlers was great enough to justify the establishment of the Yukon Territory in 1898. The *Yukon Act* provided for a Commissioner and Council, appointed by Ottawa, who were to administer Yukon subject to instructions from the Governor in Council. By 1908 all the members of the Council were elected and the Commissioner in Council legislated in the same manner as a provincial legislature. After the gold rush ended in 1910, the population of Yukon declined, the size of the Council was reduced and there was little significant constitutional development again until the 1950s. The evolution which took place from 1950 to 1970 amounted essentially to enlargement of the Council to reflect population growth and the establishment of an Advisory Committee on Finance to the Commissioner, which consisted of three counsellors recommended by the Council.

The residue of the North-West Territories, the part we now call the Northwest Territories, never saw the early surge of constitutional growth which took place in Yukon. It remained sparsely populated and did not experience the same burst of development. The Commissioner and Council of the NWT were all federal officials until after World War II and it was only in 1951 that elected members of the Council were added. From 1905 until 1963, the Deputy Minister of the Department of the Interior and its successor departments served also as Commissioner of the NWT, and it was not until 1967 that the commissioner became resident in the NWT.

From 1950 to the present, the federal attitude has been one of tacit and at times explicit encouragement of political and constitutional maturation in the territories. During the past decade the pace of constitutional evolution has accelerated. There have been significant steps toward responsible government and growing autonomy from Ottawa.

In 1971, as a result of pressure from the Council, the Commissioner of Yukon was instructed by the Minister of Indian and Northern Affairs to establish an Executive Committee consisting of the Commissioner, two assistant commissioners (one a federal and the other a territorial civil servant) and two elected Council members who were to be full-time executive officers paid from the Yukon consolidated revenue fund. The elected Committee members were to be appointed on the recommendation of the Council and were subject to its recall. Although the Commissioner remained ultimately responsible for the administration of government, as provided for in the *Yukon Act*, he was instructed to give the fullest possible consideration to the advice of the Executive Committee, particularly to that of the elected members. The elected members of the Committee were each to be assigned administrative responsibility for one or more departments and, having taken part in the formulation of the Committee's legislative program, they sponsored and defended bills put before Council and acted very much like a Cabinet.

In 1979, by ministerial instruction to the Commissioner, the installation of *de facto* responsible government in Yukon was completed. The Executive Committee was replaced by an Executive Council, which now consists entirely of elected representatives. A political party system has emerged, with the leader of the majority party selecting members of the Executive Council and assigning portfolios. The Commissioner no longer takes part in the deliberations of the Executive Council and is bound by its advice in all areas for which the Commissioner in Council has jurisdiction under the *Yukon Act*, except for matters of special federal interest and responsibility. Control of the territorial budget rests entirely with the Executive Council. Thus, through the use of instructions to the Commissioner, responsible government (in which the executive is responsible to an elected legislature) has been established in Yukon. The Commissioner's role has been reduced from that of chief administrator to one of a largely ceremonial nature, much like that of a provincial lieutenant governor. However, these developments are not yet reflected in the *Yukon Act*, which will be amended only after native claims have been settled.

In the NWT as well, measures have been taken by the Minister of Indian and Northern Affairs to move that territory toward responsible government, although this evolution has not proceeded as quickly in the NWT as it has in Yukon. In 1970, the Executive Committee of the Government of the Northwest Territories (GNWT) consisted entirely of federal and territorial officials — the Commissioner, the Deputy Commissioner and an Assistant Commissioner. Today, the Executive Council is composed of a Commissioner, and elected members who head the various departments of government. In essence, the status and relationship of the Commissioner and the Executive Council replicates what was found in Yukon prior to the 1979 instructions of the Minister. The federal government is committed to responsible government and it is generally assumed in the NWT that the roles of the Commissioner and the Executive Council will ultimately follow a similar evolutionary process as occurred in Yukon.

6.2.2 Governmental Institutions of the Territories

6.2.2.1 The Commissioner — Yukon and the NWT

By virtue of section 3 of both the *Yukon Act* and the *NWT Act*, the Governor in Council appoints the commissioners of both territories as chief executive officers. Before the recent shift toward responsible government in both territories, the commissioners were the preeminent governmental forces in the territories. However, since the evolution of the Executive Council, Yukon and Executive Committee (now Executive Council) in the NWT, the role of the commissioners has tended to approach more closely that of the lieutenant governors in the provinces.

Yukon has an Administrator who exercises the powers of the Commissioner in his absence or illness. In the NWT this function is performed by a Deputy Commissioner. Effective April 12, 1984, Agnes Semmler of Inuvik was appointed Deputy Commissioner of the NWT. Contrary to the role of the previous Deputy, her appointment is on a part-time, stipendiary basis only, and her duties are routine. She will have no political involvement, and her position will be comparable to that of the Administrator in Yukon.

6.2.2.2 Legislative Assembly — Yukon

The Yukon Council, popularly referred to as the Legislative Assembly, consists of 16 elected members, seven of whom represent districts in Whitehorse. The Speaker of the Assembly is Don Taylor (Watson Lake). In June, 1982 the Assembly consisted of nine Progressive Conservatives, six New Democrats and one Independent. The four standing committees of the Legislature include the Members' Services Board, the Rules, Elections and Privileges Committee, the Public Accounts Committee and the Statutory Instruments Committee. There are also special committees on constitutional development and privileges.

The Clerk of the Assembly is Patrick Michael. His office provides advice on parliamentary procedure to the Speaker, the Chairman of the Committee of the Whole and individual members of the Legislative Assembly. Administrative and support services are also provided to the assembly during sessions, and to standing and special committees and individual members on a day-to-day basis.

As of June, 1982, Yukon's Legislative Assembly members were:

Clark Ashley (PC) — Klondike
William Brewster (PC) — Kluane
Maurice Byblow (NDP) — Faro
Allen Falle (PC) — Hootalinqua
Bea Firth (PC) — Whitehorse Riverdale South
Margaret Joe (NDP) — Whitehorse North Centre
Roger Kimmerly (NDP) — Whitehorse South Centre
Dan Lang (PC) — Whitehorse Porter Creek East
Piers McDonald (NDP) — Mayo
Kathie Nukon (PC) — Old Crow
Chris Pearson (PC) — Whitehorse Riverdale North
Anthony Penikett (NDP) — Whitehorse West
Andrew Phillipsen (PC) — Whitehorse Porter Creek West
David Porter (NDP) — Campbell
Donald Taylor (IND) — Watson Lake
Howard Tracey (PC) — Tatchun

6.2.2.3 Legislative Assembly — NWT

The NWT Council, popularly referred to as the Legislative Assembly, consists of 24 elected members (November 24, 1983 election). The speaker of the NWT Assembly is Donald M. Stewart (Hay River). In January, 1983 the Assembly consisted of eight Inuit, five Dene/Metis and nine non-natives — a majority of native members. There are no political party affiliations officially in the NWT Assembly.

The Clerk of the Assembly is David Hamilton. There is also a small staff, which provides administrative and support services to the members. Simultaneous translation services in Inuktitut and the language of the Dene are provided as necessary for sessions of the Assembly. Sessions are rotated between Yellowknife and regional centres.

As of January, 1984 the composition of the Legislative Assembly of the NWT by constituency was as follows:

Speaker: Donald Stewart

Members

Moses Appaqaq	Hudson Bay
Joe Arlooktoo	Baffin South
Mike Ballentyne	Yellowknife North
Thomas Butters	Inuvik
Tagak Curley	Aivilik
Nellie Cournoyea	Nunakput
Mark Evaluarjuk	Foxe Basin
John T'Seleie	Sahtu
Pauloosie Paniloo	Baffin Central
Arnold McCallum	Slave River
Bruce McLaughlin	Pine Point
Robert MacQuarrie	Yellowknife Centre
Richard Nerysoo	Mackenzie Delta
Dennis Patterson	Iqaluit
Ludy Pudluk	High Arctic
Eliza Lawrence	Tu nede
Red Pedersen	Kitikmeot West
Michael Angottitauruq	Kitikmeot East
Samuel Gargan	Deh Cho
Nick Sibbeston	Deh Cho Gah
Ted Richard	Yellowknife South
Donald Stewart	Hay River
James Wah-Shee	Rae-Lac La Martre
Gordon Wray	Kivallivik

6.2.2.4 Executive Council — Yukon

The Executive Council was established by the Commissioner in 1979 as a result of his instructions from the Minister of Indian and Northern Affairs. It does not have legal status, since the *Yukon Act* still vests executive authority in the Commissioner exclusively. The Executive Council has collective responsibility for policy and decision-making and the general direction of the Yukon Territorial Government. The Executive Council is assisted in its decision-making by the cabinet committees on finance and legislation and the permanent advisory council. The Executive Council Office provides policy analysis and review, research, coordination and administrative support to the offices of the government leader, ministers, internal auditor and commissioner.

6.2.2.5 Executive Council — NWT

The Executive Council is the senior decision-making body of the Government of the Northwest Territories. The Commissioner continues to be the formal head of government and chairs the Executive Council. The Council is made up of the Commissioner, a civil servant, and eight elected Executive members, all of whom are MLAs for various constituencies. One member is chosen as government leader and is the deputy chairman of the Executive Council. Each elected Executive member is minister of a department or departments.

Executive members are collectively responsible for decisions on policy and programs, for relations with federal and provincial governments and for the general conduct of government in the NWT.

6.2.2.6 The Judicial System in the NWT and Yukon

Both Yukon and the NWT have been granted responsibility for the administration of justice with the exception of criminal prosecutions. The *Criminal Code* specifies that the Attorney General for Canada is also the Attorney General for the two territories. There is one resident supreme court judge in Yukon and two in the NWT as well as territorial courts, magistrates' courts and numerous justices of the peace. Supreme court judges of the NWT are ex-officio members of the Supreme Court of Yukon and vice versa.

The Court of Appeal for Yukon comprises judges of the BC Court of Appeal, the supreme court judge from Yukon and a supreme court judge from the NWT. The Court of Appeal for the NWT is composed of judges of the Alberta Court of Appeal, the supreme court judge from Yukon and a supreme court judge of the NWT.

There has been an attempt in recent years to appoint local people as justices of the peace in the settlements, and a native courtworkers program has attempted to bring the criminal justice system in the North more in tune with the social and cultural realities of the two territories.

6.2.3 Political Institutions

6.2.3.1 Party System

While federal elections in the North have long been fought along traditional partisan lines, the party system is in its infancy at the territorial level. This has in part been the result of the importance of personality politics in the sparsely populated North.

In the 1978 Yukon election, 14 of the 16 elected candidates ran as representatives of Canada's three major parties. The Progressive Conservatives won a majority and their leader chose the Executive Council from members of his party. The political process in Yukon now operates on the principles of party government found in southern Canada. Partisan politics and the party system appear to have become permanent features of political life in Yukon.

In the NWT this is not yet the case. For the most part, southern partisan distinctions have had little relevance to the NWT at the territorial level. Secondly, native involvement in territorial politics is and has been more relevant and significant in the NWT than in Yukon. The imperatives of partisan politics have to a certain extent clashed with the imperatives of native political culture. In the absence of partisan politics in the Legislative Assembly, legislative alliances have developed along regional, ethnic, philosophical or positional lines, yet it is possible to note the beginnings of party development.

6.2.3.2 Interest Groups

Like other jurisdictions, Yukon has a number of organized interest groups active in the political process. These organizations present briefs to various inquiries and other forums, and take positions and lobby government on various issues of importance to the political and economic development of Yukon. Some of the more important groups are:

Yukon Chamber of Mines;
Whitehorse Chamber of Commerce;
Yukon Conservation Society;
Consumers Association of Canada;
Yukon Visitors Association;
Yukon Trappers Association;
Yukon Federation of Labour;
Council for Yukon Indians.
Yukon Status of Women
Klondike Placer Miners' Association

There are also many interest groups in the NWT, most significant of which are the native organizations which will be discussed in the next section. The NWT Chamber of Mines has been a vocal and articulate supporter of mining exploration and development and the Chamber of Commerce is active in the larger communities in the territory. In the smaller communities, hunters and trappers associations are fairly active.

6.2.3.3 Native Organizations — Yukon

The Council for Yukon Indians

Yukon Indians first broached the idea of a settlement in 1902, when Chief Jim Boss wrote to the Government of Canada asking for a treaty to protect his people from the effects of the coming of non-natives during the Klondike gold rush. Yet for many years no treaty was negotiated and the Indian people remained unorganized. In 1958, the Yukon Indian Advancement Association was formed by a group of concerned Indians and non-Indians. One of its major accomplishments was the Skookum Jim Memorial Hall, which in 1969 became the Yukon Indian and Metis Friendship Centre.

In 1969, the Indian band chiefs established the Yukon Native Brotherhood (YNB). When funds became available, the YNB's first objective was to document the needs and aspirations for a Yukon Indian land claims settlement. In 1971, the Yukon Association of Non-Status Indians (YANSI) was formed to represent the interests of Yukon's non-status Indians — that is, those Indians not covered under the *Indian Act*.

In January, 1973 the YNB, supported by YANSI, presented the prime minister of Canada with a statement of grievances and principles for negotiating a land claim. This historic document was entitled "Together Today for our Children Tomorrow". It was the first time that a group of Canadian people of native ancestry had prepared and presented such a document. Based on the principle that all the Indians of Yukon had the right to develop their lives fully in a society where their economic, cultural and social wishes and needs were capable of being met, the statement outlines aboriginal rights, defines what it means to be Indian and claims the traditional homeland. When the federal government accepted the document as a basis for settlement by negotiation of the land claims of the Yukon Indians, the need arose for an organization founded on the document's principles, an organization which could negotiate with the federal government to settle the claim.

The Council for Yukon Indians (CYI) was established late in 1973 to represent both status and non-status Indians in the negotiation of a joint land claim. At this same point, both YNB and YANSI were occupied with their own separate responsibilities and had neither the time nor the resources to undertake negotiations.

In 1980, a historic occasion in the history of Canadian Indian political development took place when the YNB and YANSI rejected the provisions of the *Indian Act* and amalgamated under the name of the Council for Yukon Indians. The CYI took over all the functions of the two former organizations.

The executive of the CYI is elected every two years in Yukon-wide elections. The CYI has a twelve-member board of directors and all board decisions must be ratified by the forty-eight-member General Assembly, which meets approximately four times a year.

As an organization the CYI has developed expertise in a number of areas, including social and educational policies, economic development, communications and resource mapping, to mention a few. The chairman of the CYI is Harry Allen.

6.2.3.4 *Native Organizations — NWT*

There are basically four native groups in the NWT today, each of which is seeking a settlement of land claims, and each of which has evolved an organization to pursue the goal. The specifics of land claims will not be addressed here as they have been described elsewhere in this manual (section 5). The organizations and their backgrounds are as follows.

Inuit Tapirisat of Canada (ITC)
(The Inuit Brotherhood)

This organization was established in 1971 to provide the Inuit with a single voice on matters of mutual concern. The organization is a federation of regional affiliates in the NWT including the Baffin Regional Inuit Association and the Kitikmeot Inuit Association (Central Arctic).

Committee for Original Peoples' Entitlement (COPE)

This organization was formed by the western Arctic Inuit in 1970, partly in response to an upsurge of exploration and anticipated development of petroleum resources in the Mackenzie Delta and Beaufort Sea. COPE, while at one time closely linked to ITC, has opted to seek a separate land claims settlement.

Dene Nation

The Indian Brotherhood of the NWT was originally formed in 1970 by the major Indian bands of the Mackenzie Region. While the original intention of the brotherhood was to oppose proposed changes in the *Indian Act* which would have reduced Treaty rights, the organization quickly shifted its focus to a concern with land claims and political autonomy. Reconstituted in the late 1970s as the *Dene Nation*, the organization is today an extremely influential and powerful voice for the Indians of the Mackenzie Valley and is mainly engaged in land claim negotiations.

Metis Association of the NWT

The Metis Association was formed as the NWT affiliate of the Native Council of Canada in 1973. The organization had taken an active role in promoting development in the Mackenzie Valley and encouraging the participation of the Metis in such development projects. Originally at loggerheads with the more radical Dene Nation, the Metis have now agreed to work with the Dene in seeking a just settlement of land claims in the valley, although differences between the groups persist.

6.2.4 Bureaucracy in the North

In the 1960s, the federal government began a policy of gradual devolution of administrative authority to the territorial councils. Naturally this meant that there would have to be a territorial public service to carry out the ordinances of those councils. Since then we have seen a fairly rapid growth of the territorial bureaucracy, as federal public servants tended to transfer to the territorial services with the programs they administered.

6.3 Government Services

6.3.1 *Federal Government Services*

The federal government provides services in Yukon and the NWT through several departments and agencies. The function and responsibilities of each are described briefly below.

6.3.1.1 Agriculture Canada

Agriculture Canada provides technical advice in the North on agricultural production, soil and vegetation, as well as research and consultative services for insects and diseases.

6.3.1.2 Employment and Immigration Canada

The department operates employment centres in the North, administers unemployment insurance and other federally funded programs directed to manpower and employment concerns.

It maintains employment centres (CECs) in Yellowknife, Hay River, Inuvik and Frobisher Bay in the NWT, and in Whitehorse, Yukon. There are sub-offices in Fort Simpson, Fort Smith and Rankin Inlet, NWT. Branch offices out of Yellowknife serve about 30 smaller settlements. In Yukon, branch CEC offices are located in Watson Lake, Haines Junction, Dawson City and Mayo. There is a year-round Canada Immigration Centre in Whitehorse and a seasonal office (May to September) in Beaver Creek.

Services include:

- information on available jobs
- recruitment of workers, both locally and Canada-wide
- referral of qualified workers to available jobs
- counselling workers on employment and related matters, including how to look for their own jobs
- counselling and other services for women, natives, the handicapped and persons with special needs
- specialized services for students
- aptitude, interest, skill and ability assessment
- referral to diagnostic services
- referral to training
- mobility and relocation assistance
- collection and dissemination of labour market information
- itinerant service to outlying communities
- support of community efforts to meet local labour market needs
- temporary income support to workers between jobs

Outreach Program:

The Outreach Program is designed to provide employment-related services to people who, for a variety of reasons, are unable to fully utilize services provided by the CECs. Typical target groups are residents of isolated communities, native people, chronically unemployed persons and individuals who experience difficulty in entering or re-entering the labour market.

6.3.1.3 Canada Mortgage and Housing Corporation (CMHC)

CMHC administers programs under the *National Housing Act*, insuring mortgage loans and providing financing to territorial housing corporations and non-profit organizations. It has offices in Whitehorse and Yellowknife.

6.3.1.4 Canada Post

Canada Post provides mail service to the area north of 60°N through 72 post offices, some of which are run by individual firms or organizations on behalf of Canada Post Corporation.

6.3.1.5 Canadian Broadcasting Corporation

The Northern Service of the CBC provides broadcasting service to meet the special needs of Inuit, Dene, Metis and non-native northerners. There are production centres in Yellowknife, Inuvik, Frobisher Bay, Rankin Inlet and Whitehorse.

6.3.1.6 Canadian National Railways

CN provides the North with transportation and communications services through the rail link to Hay River and the operations of NorthwesTel.

6.3.1.7 Canada Oil and Gas Lands Administration

The Canada Oil and Gas Lands Administration (COGLA) was established to administer northern oil and gas rights and associated oil and gas activities on behalf of the Minister of Indian and Northern Affairs. The regional office at Yellowknife, NWT, carries out administrative duties under COGLA's jurisdiction for the NWT.

6.3.1.8 *Canadian Transport Commission (CTC)*

The Air Transport Committee of the CTC licenses and regulates air carriers, surveys operations and advises the federal Minister of Transport on civil aviation matters in the territories.

The Water Transport Committee administers the *Transport Act* in the territories, licenses carriers and approves tariffs for commercial water carriers.

6.3.1.9 *Department of Communications (DOC)*

DOC promotes efficient northern communications through offices in Yellowknife, Fort Smith and Whitehorse.

6.3.1.10 *Crown Assets Disposal Corporation*

The corporation acts as agent of the Crown in the sale of surplus federal assets. By agreement it also is responsible for sale of US surplus at DEW Line sites and also the surplus assets of the NWT.

6.3.1.11 *Eldorado Nuclear Limited*

Eldorado is a Crown company which explores for mines and refines uranium.

6.3.1.12 *Energy, Mines and Resources Canada (EMR)*

Through various divisions EMR does geological survey work; provides information on the earth's magnetic field and on earthquakes; collects and assembles data on variations in gravity; studies the dynamics of the earth; administers and manages mineral resources in Hudson Bay and Hudson Strait; conducts research on steels and other metals exposed to arctic conditions; develops and coordinates a program to produce and use remotely sensed data; assists in the development of mineral resources; provides geodetic, topographic and geographic information; carries out land surveys; produces, maintains and distributes maps; and conducts scientific investigations unique to the Arctic.

6.3.1.13 *Environment Canada*

The Environmental Protection Service insures enforcement of most of the federal government's regulations concerning environmental protection, operating through district offices in Whitehorse and Yellowknife. However, the Northern Renewable Resources Branch of INAC is the lead agency for environmental regulations in the North, under the *Territorial Lands Act*, the *Arctic Waters Pollution Prevention Act*, the *Dominion Water Power Act* and other such legislation.

The Atmospheric Environment Service (AES) provides information, consultation and advice on past, present and future atmospheric ice-and sea-state conditions. AES accomplishes this through its observation and communications networks and arctic forecast systems. Its Field Services Directorate provides up-to-date weather and marine information to most of the larger northern communities. It operates five networks for data acquisition, an Arctic Weather Centre, a centralized analysis and prognosis centre, satellite readout stations, contract stations and scientific support offices.

The Environmental Management Service, through the Canadian Wildlife Service, manages and administers programs concerning migratory birds, coordinates federal and territorial action on wildlife programs and surveys, and inventories and conducts biological research in the Arctic.

The Inland Waters Directorate carries out studies on surface and ground water, snow, ice and permafrost.

The Lands Directorate researches and provides data on land use, coordinating departmental advice on the topic for other government agencies.

The Canadian Forestry Service advises and assists INAC on forestry operations and staff training, participates in environmental impact assessments, conducts forest research and prepares and compiles forestry statistical data.

Parks Canada plans and manages existing parks and evaluates areas and sites as potential parks and landmarks.

6.3.1.14 *External Affairs Canada*

External Affairs advises on matters having foreign policy implications, maintains a coordinating and operational role in matters of international law and policy relating to the Arctic, and negotiates with countries proposing activities in the North.

6.3.1.15 *Federal Environmental Assessment Review Office (FEARO)*

FEARO convenes panels of knowledgeable persons within and outside the federal public service who prepare guidelines for Environmental Impact Statements on projects requiring formal study and who review the resulting statements.

6.3.1.16 *Department of Fisheries and Oceans (DFO)*

DFO is responsible for fisheries research and management and oceanographic research. Fishing officers enforce regulations, inspect operations and perform limited management functions. Oceanographic investigations relate to the *Arctic Waters Pollution Act* and the *Ocean Dumping Control Act* and result in advice to other government departments or agencies. The Canadian Hydrographic Service conducts surveys, produces, distributes and maintains nautical charts, and provides sailing directions and tide tables for northern regions.

6.3.1.17 *Health and Welfare Canada Medical Services Branch*

The branch provides and administers health care programs to all Yukon residents, serving as the territorial health department. Costs are shared between the branch and the territorial government.

The branch provides acute treatment care to the NWT except in centres such as Yellowknife, Hay River and Fort Smith which are served by the territorial Department of Health. The GNWT provides support services in finance and administration.

The Social Services Programs Branch, through the Canada Assistance Plan, contributes 50 per cent of territorial and municipal public assistance and welfare service expenditures, and makes consultant services available.

6.3.1.18 *Indian and Northern Affairs Canada (INAC)*

INAC carries out its northern responsibilities through two major programs, the Northern Affairs Program and the Indian and Inuit Program.

The Northern Affairs Program is made up of various branches: the Policy and Co-ordination Branch, the Northern Environment Branch, the Northern Regulatory Review Group and the Northern Resources and Economic Planning Branch. The responsibilities of each branch are as follows.

The Northern Policy and Co-ordination Branch develops and coordinates policies related to the department's activities in the North, and collects, interprets and disseminates information on annual federal and territorial activities and expenditures related to Canada's North. It monitors the progress toward self-government, administers social and cultural programs, plans, coordinates and support northern science and is the focal point for planning, public review assessments and post-permit responsibilities for all hydrocarbon transport proposals north of 60°N.

The Northern Environment Branch develops and recommends policies, strategies, plans and regulations for the management of renewable resources and for environmental protection, and carries out an applied research program. The branch administers surface rights on Crown lands, manages and protects inland and offshore waters, provides forest fire protection, manages forest resources and conducts environmental assessments of resource development proposals.

The Northern Regulatory Review Group reviews the regulatory and approval processes as applied to industrial projects in Canada's North. The regulatory review is being carried out over a period of about two years. Particular attention is being given to mining, oil, gas and transportation.

The Northern Resources and Economic Planning Branch plans, analyses and develops policies and programs and implements projects with a view to strengthening and encouraging the development of the territories, in particular in the areas of energy and mineral development, transportation and communications infrastructure and the development of the economy and renewable resources. The branch manages the federal government's proprietary interest in minerals, including oil and gas, defines mineral potential, advises on development of mineral policy and legislation and is responsible for the collection of mineral royalties.

6.3.1.19 Regional Industrial Expansion

The department, formerly known as Industry, Trade and Commerce, plays a role in the industrial development of the natural resources of Canada's northern territories. It is also responsible for the Canadian Government Office of Tourism, which consults with the tourism departments of the territorial governments, entering into agreements to cooperate in projects where there is mutual interest.

6.3.1.20 Department of Justice

The Minister of Justice appoints judges to the territorial Supreme Courts, while the department, with offices in Whitehorse and Yellowknife, directs court proceedings on behalf of the Crown under the *Criminal Code*, other federal statutes and territorial ordinances.

6.3.1.21 Labour Canada

Labour Canada administers the *Canada Labour Code* and is responsible in the federal jurisdiction for: industrial standards (conditions of work, minimum wages, hours of work); health and safety of employees; and industrial relations (collective bargaining, labour-management relations).

The department maintains an office in Whitehorse to serve both Yukon and the NWT.

6.3.1.22 Department of National Defence

The Department of National Defence (DND) safeguards the sovereignty and independence of Canada. In the North the department protects Canada against threats and challenges to its territory and contributes to security arrangements in concert with allies in North America and NATO.

DND supplements and supports civil departments and agencies in the North.

As of September 1984, Canadian Forces Units are located in Yukon and the NWT as follows: Northern Region Headquarters — Yellowknife Detachment; 440 Transport and Rescue Squadron Detachment — Yellowknife; 742 Communication Squadron Detachment — Yellowknife; Northern Region Headquarters — Whitehorse; Canadian Forces Station Inuvik; Canadian Forces Station Alert; Canadian Forces Base, Greenwood Detachment — Frobisher Bay; 764 Communication Squadron Detachment — Frobisher Bay.

DEW-Line (Defence Early Warning) Sites — (Air Command):

Main
Cape Perry
Cambridge Bay
Hall Beach
Cape Dyer

Auxiliary
Komakuk Beach
Shingle Point
Tuktoyaktuk
Nicholson Peninsula
Clinton Point
Cape Young
Lady Franklin
Byron Bay
Jenny Lind Island
Gladman Point
Shepherd Bay
Pelly Bay
Mackar Inlet
Longstaff Bluff
Dewar Lakes
Cape Hooper
Broughton Island

6.3.1.23 National Energy Board

The board regulates specific areas of the oil, gas and electrical utility industries in the public interest and advises government on the development and use of energy resources.

6.3.1.24 National Film Board (NFB)

NFB produces motion pictures, film loops, filmstrips, slide sets and still photo exhibits about the Canadian North, its people and their activities and its industries, resources and institutions, for distribution in Canada and abroad.

6.3.1.25 National Museums of Canada

National Museums help publicly owned museums in conservation, undertake research and rescue archaeology, document the cultural heritage of the aboriginal peoples, contribute to the knowledge of animal species in Canada, maintain national collections of minerals, and collect Pleistocine vertebrate material in Yukon in order to reconstruct vertebrate history of the region.

6.3.1.26 National Research Council (NRC)

NRC conducts research on: the structural and thermal performance of roads, pipelines, building foundations and other structures on permafrost and sea ice; wind generation of electrical energy; on magnetic phenomena; ionospheric conditions; sea ice and icebreakers; and cosmic rays.

6.3.1.27 Northern Canada Power Commission (NCPC)

NCPC is concerned with the planning, construction and management of public utilities on a commercial basis. It is the principal producer of electrical energy and operates the main electrical power transmission networks and community heating, water and sewerage systems in several locations.

6.3.1.28 Northern Pipeline Agency

This agency oversees the regulation of the Alaska Highway Gas Pipeline to ensure that construction and operation provide the maximum economic, industrial and energy benefits for Canada, and that social and environmental impacts are kept to a minimum.

6.3.1.29 Northern Transportation Company Limited

The Northern Transportation Company provides transportation and related services to the North.

6.3.1.30 Public Service Commission of Canada (PSC)

PSC administers the *Public Service Employment Act* by developing and administering standards for selection of candidates for the federal public service, by providing and operating mechanisms for appointments challenged as violations of the merit principle and by auditing the manner in which staffing authority is exercised. It also administers the Act as it relates to the political activities of public servants, ensures equality of access to the public service for all Canadians, conducts and advises on training and development programs, and investigates discriminatory treatment in the public service.

It maintains an Office of Native Employment at the PSC District Offices in Yellowknife and Whitehorse.

6.3.1.31 Department of Public Works (DPW)

DPW provides a wide range of engineering, architectural and construction services. In the North, it is concerned predominantly with housing and transportation, providing dwellings for federal government employees, keeping water transportation routes navigable, and designing, constructing and maintaining highways.

6.3.1.32 Department of Regional Economic Expansion, now Regional Industrial Expansion

The work of this department now called Regional Industrial Expansion, is to plan and coordinate programs designed to overcome regional economic disparities in Canada in cooperation with the territorial governments and other federal government departments.

6.3.1.33 *Revenue Canada*

This department controls the international movement of goods, persons and conveyances, collects duties and tax due on imports, and administers the provisions of the *Excise Tax Act*, the *Excise Act*, the *Importation of Intoxicating Liquors Act* and related regulations. It issues licences, provides tax information and audits the records of businesses subject to payment of federal sales and excise taxes.

Customs ports are maintained in Yukon at Whitehorse, Beaver Creek, Dawson, Little Gold (summer only), Old Crow and Pleasant Camp and in the NWT at Frobisher Bay and Inuvik. Customs service at other locations in the NWT and Yukon is provided by other federal government departments including Royal Canadian Mounted Police, Canadian Coast Guard, Department of National Defence and the Department of the Environment.

6.3.1.34 *Royal Canadian Mounted Police*

The RCMP provides policing to the territories under contract to the territorial governments. "G" Division, with headquarters in Yellowknife, and "M" Division, headquartered in Whitehorse, are responsible for the NWT and Yukon respectively.

There are 38 detachments in the NWT, two highway patrols and five plain-clothes units; 25 settlements are served by Regular Patrol Service. In Yukon, there are 12 detachments serving communities outside Whitehorse.

6.3.1.35 *Statistics Canada*

Statistics Canada maintains an ongoing program of consultation and liaison with the governments of Yukon and the NWT and offers technical support for the statistical activities those governments conduct.

6.3.1.36 *Secretary of State*

This department administers programs to encourage effective Canadian citizenship and coordinates the formulation and development of national strategies and policies affecting citizenship.

6.3.1.37 *Transport Canada*

Transport Canada develops, promotes and coordinates plans and programs for transportation services and terminal facilities, and plans, undertakes, directs and funds transportation research. Its Railway Transportation Directorate formulates railroad policy. The Water Transportation Assistance Directorate subsidizes essential water transport services. The Arctic Transportation Directorate has been incorporated into the Government Relations Branch, which provides coordination and liaison between Transport Canada and the territorial governments. The Canadian Surface Transportation Administration manages the Urban Transportation Assistance Program. The Highway Branch negotiates and manages cost-shared highway programs.

The Canadian Marine Transportation Administration provides facilities and services for commercial and re-supply shipping, coordinates the delivery of cargo to northern communities, provides ice and routing information, provides icebreaker support, carries out environmental research and surveys, installs, operates and maintains aids to marine navigation including Coast Guard radio stations, carries out search and rescue operations, administers the *Navigable Waters Protection* and the *Arctic Waters Pollution Prevention Acts*, leases facilities to a Crown company in the transportation field, administers port facilities at various locations north of 60°N, and conducts research and development on marine transportation technology.

The Canadian Air Transportation Administration is responsible for the national civil air transportation system, including specification of criteria for arctic airports and the ownership and operation of those classified Arctic "A"; develops and enforces aeronautics legislation standards and procedures; inspects, examines, licenses and certifies personnel and aircraft; provides surveillance of aircraft manufacture and repair and investigates aircraft accidents and incidents; provides control services to IFR flights; provides aeronautical communication services; and conducts survival training programs.

6.3.1.38 *Veterans Affairs Canada*

This department provides health care, financial assistance and counselling to eligible veterans and their dependents.

6.3.2 Yukon

6.3.2.1 General

The responsibilities of the territorial government are administered by a number of departments. They are listed below with a brief outline of their functions.

6.3.2.2 Consumer and Corporate Affairs

Consumer Services, Corporate Affairs, Labour Services, and Yukon Utilities regulation are the responsibility of this department. It has special programs on consumer and metric information, and occupational health and safety, employment standards and fair wages.

6.3.2.3 Education, Advanced Education and Manpower

This department is responsible for the administration of Yukon's public schools, adult institutional training, apprenticeship, tradesmen's certification, industrial training, post-secondary student financing, manpower planning and employment development programs.

6.3.2.4 Finance

The financial operations, accounting services, revenue and taxation, and financial management of the Government of Yukon are handled by this department.

6.3.2.5 Government Services

This department includes the following branches: Property Administration, Supply Services; Systems and Computing Services; and Public Works. The department coordinates general service agencies used by various other Yukon government departments.

6.3.2.6 Health and Human Resources

Health services, alcohol and drug services, and vocational rehabilitation services are provided by Health and Human Resources. Special programs of note include: child welfare; day care licensing and subsidy programs; youth services; services to seniors; community development; and speech pathology/audiology.

6.3.2.7 Community and Transportation Services

The Highways Branch of the department is responsible for the maintenance, construction and reconstruction of Yukon highways, and provision of mechanical services. The Airports Branch maintains, and in some cases operates Arctic "B" and "C" airports for the Yukon Government and for a number of federal departments. Some 20 emergency landing strips are also maintained. The Transport Services Branch administers Motor Vehicles and highway weigh stations and provides support service to the Motor Transport Board which regulates highway transportation.

Community Affairs has the responsibility for community and municipal services, lands, protective services, and property assessments and services.

6.3.2.8 Executive Council Office

The Executive Council office provides support to Cabinet, coordinates the agenda for Cabinet and related committees, carries out an analysis and review of all Cabinet submissions and intergovernmental agreements. Intergovernmental Relations, the Land Claims Secretariat and the Federal Relations office in Ottawa come under the administration of this department.

6.3.2.9 Justice

The department provides or has responsibility for: legal services, land titles, public administration/coroner, legislative counsel, courts and administrative services, legal aid, territorial court, sheriff's office, supreme court of Yukon, corrections and adult probation services.

6.3.2.10 *Tourism, Recreation and Culture*

This department is responsible for development and management of libraries and archives services, recreation services and heritage resources.

6.3.2.11 *Renewable Resources*

The work of this department is carried out by four branches — Administration, Lands, Parks and Resources Planning, Policy and Fish and Wildlife.

6.3.2.12 *Economic Development*

The department includes the following branches: Administration; Special Projects; Economic Research and Planning; and the Energy Branch.

6.3.2.13 *Other Yukon Government Agencies*

Agencies other than departments include the Workers' Compensation Board, the Yukon Housing Corporation, and the Liquor Corporation.

6.3.3 Northwest Territories

6.3.3.1 *General*

The responsibilities of the Government of the Northwest Territories are administered by various departments, some of which are listed below, each with a brief outline of its functions. There are also secretariats to the Financial Management Board, to the Executive Council and to Energy, Mines and Resources.

6.3.3.2 *Economic Development and Tourism*

This department has the responsibility of developing the human resources of the NWT through encouraging small businesses, providing employment opportunities and facilitating the development of skills which will help achieve these goals. It plans and establishes programs to promote tourism and to encourage the marketing and sale of goods produced in the territory.

The department is involved in the planning and establishment of territorial parks and recreational facilities to assist in the development of the tourist industry.

In concert with the federal government, the Department of Economic Development and Tourism administers various small business loans, grants funds and maintains a manpower inventory within the NWT (the Territorial Employment Record and Information System, or TERIS).

6.3.3.3 *Local Government*

This department has as its prime objective the development of political and social awareness and the fostering of the skills of democratic politics at the community level in the NWT.

The department's largest division is the Municipal Affairs Division. Its objective is to establish and provide guidance to local government institutions, and to see that they are administered economically, competently and within the guidelines of the Territorial Ordinances.

The Town Planning and Lands Division is concerned with guiding the physical growth of communities and the effective utilization of land within the communities.

The Development and Training Division has as its objective the promotion of a better understanding of the process of community development and government in the North. The division works closely with federal agencies, native groups and the communities to foster better understanding of the process of community development at the local level.

6.3.3.4 *Social Services/Health*

These departments are responsible for the provision of health services, correctional services, welfare, children's aid, alcohol abuse programs and day care.

One of the more important dimensions of the operation of these two departments is the policy of fostering local involvement in decision-making and in the management of the relevant programs. They encourage citizen participation and the decentralization and devolution of social and health services to the community and regional levels.

6.3.3.5 *Education*

The Education Department has the sole responsibility for the delivery of educational services to the NWT. This includes the development of curricula, the training of educational staff and the overseeing of construction of school facilities.

One of the more important tasks of the department in recent years has been the development of teaching materials and curricular options in the native languages.

In the spirit of decentralization and devolution in the NWT, the Department of Education has been fostering the development of skills in the communities which will ultimately result in the transfer of the department's current responsibilities to locally elected school boards.

6.3.3.6 Renewable Resources

This department brings together all territorial government programs related to the cultural and economic traditions of the native way of life in the NWT. The responsibilities include fish and wildlife management, forestry, land management and environmental protection on those lands which are under territorial administration. The goals of this department are still achieved to a large extent with the cooperation of federal agencies.

One important feature of the programs of this department is the hiring of native northerners and the utilization, where possible, of the skills and experience of the residents of the communities of the NWT.

6.3.3.7 Justice and Public Services

The objectives of this department are to superintend the administration of justice in the NWT and to oversee the enforcement and implementation of territorial ordinances.

6.3.3.8 NWT Housing Corporation

The objective of the NWT Housing Corporation is to provide suitable housing to residents of the NWT at reasonable costs. Specific programs of the Housing Corporation include construction of low-rental accommodation, accommodation for single persons and senior citizen accommodation, and administration of rental-purchase plans and Home Acquisition Assistance grants.

6.3.3.9 Government Services

This department provides support to other departments in areas such as purchase and management of supplies and materials, communications, transportation and computer-related services. In addition, the department has program responsibility for administering the liquor system, the motor vehicles registry and the distribution of petroleum products to more than 45 communities not served by the private sector.

6.3.3.10 Personnel

The Department of Personnel is responsible for the planning and coordination of personnel management within the public service of the Government of the Northwest Territories. Staff development and training is an important program in this department.

6.3.3.11 Public Works

This department is responsible for the designing, building, operating and maintaining of all the buildings and works required by the Government of the Northwest Territories, including operation of ferries, vehicles, heavy construction equipment, and the maintenance and reconstruction of roads and highways.

6.3.3.12 Information

One of the major departmental concerns is directed towards implementation of an active information program responsive to the communication needs of northerners, regardless of language.

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7.0 Renewable Resources

7.1 Water

7.1.1 General

Flying over Yukon or the Northwest Territories during the summer leaves the impression of countless lakes, representing a vast resource of fresh water. Indeed, it has been estimated that about half of Canada's reserves of water lie north of 60°N latitude. In the NWT the amount is huge, much of it is static. Losses are low and the rate at which reserves are replenished is also low.

Low losses are the direct result of low temperatures. Permafrost underlies much of the area and this limits downward percolation of surface water. At the same time, low temperatures result in low evaporation and low rates of growth of vegetation, and hence low losses due to evapotranspiration.

Reserves are replenished slowly because precipitation is low over most of the area. In fact, those parts of the drainage basins of the major rivers which lie south of territorial boundaries contribute a disproportionate share of the flow.

There are many river systems in the Yukon and N.W.T. The best-known are the Yukon, in the territory of the same name, and the Mackenzie, in the western half of the NWT.

East of the Mackenzie River drainage basin a number of smaller rivers, including the Coppermine, drain directly into the Arctic Ocean. In the District of Keewatin, rivers run southeast into Hudson Bay from the eastern portion of the district; from the northwestern part they empty into the gulfs on the southern edge of the Arctic Ocean. Although the Back and Thelon are major rivers, neither approaches the size or importance of the Mackenzie or the Yukon.

There are numerous smaller rivers throughout the territories. Of these, 172 have sufficient flow to warrant one or more streamflow gauging stations.

Many of these rivers have potential for hydroelectric production; a few have already been developed. Some rivers are navigable and have played a role in transportation. However, only the Mackenzie carries a large amount of freight, although the Yukon at one time provided an important link between Whitehorse and Dawson.

7.1.1.1 Yukon River

The Yukon River drains above the gauging station at Dawson 264,000 km^2. The basin includes the Atlin area of northern British Columbia and much of southern Yukon.

The Yukon River at Dawson has a mean annual flow (1945-80) of 2210 m^3/s. Monthly mean flows vary from a low in March of 427 to a high in June of 5880 m^3/s. Over the period 1945-80 the maximum monthly flow per second was recorded as 12,200 m^3, in June 1964, and the minimum was 185 m^3/s, which occurred in February 1951. The principal tributaries of the Yukon from its headwaters to its crossing into Alaska with their mean annual flows (taken from the 1982 *Historical Streamflow Summary*, published by Environment Canada) in cubic metres per second (m3/s) in parentheses are the Teslin (301), Pelly (382), White (112), Stewart (454) rivers.

There is no commercial water transportation on the Yukon at present, except for sightseeing excursions.

At Whitehorse, the mean date for permanent ice cover (1965-74 data) is November 7, with complete freeze-over by December 3. The earliest and latest dates during the period were: for permanent ice, October 7 and December 10; and for complete freeze-over, November 1 and January 21. Breakup has started (1965-74) as early as March 13 and as late as May 6, with ice-free dates of April 14 and May 24. The mean date of breakup at Dawson is May 13.

7.1.1.2 Mackenzie River

In the NWT, the Mackenzie River drains an area of some 804,200 km^2, which is about 45 per cent of the total Mackenzie River Basin. Of the remaining portion, almost half is in Alberta and a little over a quarter in British Columbia, with the remaining quarter divided about equally between Saskatchewan and Yukon.

The Mackenzie River carries the water of Great Slave Lake to the Arctic, a distance of about 1722 km. At the gauging station closest to Great Slave Lake the mean annual flow averaged over the period 1961-78 was 6820 m^3/sec. In the same period the minimum mean monthly flow occurred during March, with a flow of 1820 m^3/sec and the maximum in July of 7160 m^3/sec. The river is braided at its mouth and, at the last gauging station above the Delta at Arctic Red River, has a mean flow of 9070 m^3/sec (1973-82 data), with a minimum mean of 3400 occurring in March and maximum mean of 21,500 m^3/sec in June. The major tributary of the Mackenzie is the Liard, which has a mean annual flow (1973-82 data) of 2420 m^3/sec. Other streams which contribute to the flow are the Arctic Red and Peel rivers.

The river is navigable along its entire length during the ice-free season. The season does not advance uniformly from south to north. The first break typically occurs about May 5 in the middle section, due to the high run-off in the drainage basin of the Liard. Break-up is delayed upstream due to the stabilizing effect of Great Slave Lake, while downstream from about Fort Good Hope, disruption of flow by upstream ice jams and lack of major tributaries holds ice for another two weeks. The river is not usually clear of ice as far downstream as Tuktoyaktuk until the very end of June or the beginning of July, but navigation in the upstream section begins about mid-June. Freeze-up occurs around October 12 in Aklavik and moves steadily upstream, reaching Fort Simpson by about November 27. However, shipping is related to ice-free conditions at the mouth and as a result the navigation season ends in late October.

Although the river is considered to be navigable over its full length there are five sections where problems can arise, particularly during seasons of low flow. The first is at the entrance to the river from Great Slave Lake and extends downstream for about 28 km. The Province Rapids, which extend for about 17 km starting at km 60, the Green Islands (km 298 to 330), the Sans Sault (km 1015 to 1028) and the Rampart Rapids (km 1080 to 1085) are also troublesome at times.

In the rapids sections, after the early season high water has receded, it is usually necessary to break tows and relay barges through the problem stretches. Recently, several tugs and barges were forced to winter at Inuvik as they were unable to get over the sharp limestone ledges which characterize the Rampart Rapids in the low water just before the end of navigation.

7.1.2 Government Controls and Regulations

The *Northern Inland Waters Act* is administered by Indian and Northern Affairs Canada (INAC). The Act set up the Yukon and NWT water boards, which license water use in each territory. These boards which may have up to nine members are made up of nominees of the three federal departments concerned with the management of water — Indian and Northern Affairs Canada, Department of the Environment and Health and Welfare Canada — and at least three persons named by the Commissioner in Council of each territory. The Minister of Indian and Northern Affairs Canada has the option of appointing three additional members. The objects of the boards are, "to provide for the conservation, development and utilization of the water resources" of the territories.

Regulations under the Act define geographical water management areas in the NWT and Yukon and provide for a number of classes of use, including agricultural, conservation, power generation, river improvement and storage purposes. Licences are required for many uses however domestic use by people owning or occupying lands adjacent to waters is excepted along with emergency fire and flood control.

The *Arctic Waters Pollution Prevention Act* applies to waters adjacent to the mainland and islands of the Arctic and is concerned primarily with the deposition of wastes. Regulations made under the Act exempt the deposit of waste permitted under the public health ordinances of the territories and where applicable under the *Oil and Gas Production and Conservation Act*, the *Territorial Lands Act* or the *Public Land Grants Act*.

7.1.3 Hydroelectric Power Generation

The rivers of Yukon and the NWT have considerable potential for electrical energy production, only a small part of which is presently developed. Within the two territories there are ten hydroelectric installations. The installed capacity is small by the usual standards, ranging in size from 0.65 MW to 39 MW.

In addition to the sites already developed, the power-generating capacity of a number of other rivers is being investigated. Some of the sites are quite small and would be of local interest only, others have potential capacities of some hundreds of megawatts. Some of the sites, such as Virginia Falls on the south Nahanni River, may never be developed because of the environmental impact this would have within Canada's National Parks.

7.2 Forestry

7.2.1 General

The forests north of 60°N remain mostly unexploited with regard to timber production. It is estimated that 700,000,000 m^3 of merchantable timber occur on 209,000 km^2 of productive forest land. About 40 per cent is in Yukon, the remainder in Mackenzie District of the NWT, where the Liard Valley has the greatest harvesting potential. Because the forests north of 60° occur in relatively small patches over a large area, accurate figures are difficult to obtain. Indian and Northern Affairs Canada (INAC) is evaluating information on the northern forests by sampling the more accessible stands and by interpreting aerial photography and Landsat imagery.

Forests provide building materials and employment in logging and sawmilling. However, they are also valuable as a source of fuel, pulpwood and for recreational use as well as habitat for wildlife from which the native people derive meat and fur. Watershed protection and erosion control are other important benefits.

Recent developments in timber harvesting methods, combined with increasing demand for forest products, have stimulated forest industry interest in the North, with a number of new firms already established; the prospect of commercially viable, though modest integrated forest products operations appears likely, although the trees are not large by southern standards. These increasing demands are expected to result in improved quality of northern forest products and create a need for better managed forests and an efficient forest industry north of 60°N.

In order to ensure proper management of the forest resource and provide adequate timber supplies to meet large capital investments by industry, procedures are being developed for the allocation of cutting rights over extended time periods of up to ten years.

7.2.2 Administration

The Northern Affairs Program of INAC is responsible for the management of the forest and forest-land resources north of the 60th parallel. These responsibilities include timber management and administration, forest protection, the regulation of surface land use operations and land administration.

Implementation of departmental policy in Yukon is the responsibility of the Forestry Division of the Northern Affairs Program with headquarters in Whitehorse. In the NWT, the corresponding headquarters is in Yellowknife. There is also a branch office at Fort Smith which has responsibility for the fire control program in the NWT.

Management of forest resources was established in the 1940s as the Yukon Lands and Forest Services and the Northwest Lands and Forest Services primarily as forest protection and fire suppression units. General improvements carried out over the years have led to the present modern, relatively well-equipped organization.

Forest management offices have been established in each of the various administrative districts in both Yukon and the NWT. Depending on the size of an administrative district or area the permanent staff might include a district superintendent, a resource management officer, a fire control officer, clerks and radio operators. In addition, rangers, summer seasonal personnel and lookout men are positioned at strategic points during the fire season.

7.2.3 The Forests

The treed area of the NWT and Yukon falls within the Boreal Forest Region described by J.S. Rowe in *Forest Regions of Canada*. Figure 7-1 shows the Boreal Forest divided into two parts — a southern part, which is predominantly forest, and a northern part, which is a mixture of forest and barrens. Rowe's publication gives a further breakdown into several forest districts, each of which is described in detail.

The Boreal Forest consists primarily of open stands of slow-growing black and white spruce and a ground cover of lichens and/or mosses, which becomes quite dense as the stands age. This forest is interspersed with many treeless bogs which are often fringed by larch and by occasional dense, tall forest stands. In the southern portion of the NWT, jack pine is often found on sandy soils and some uplands. The common deciduous trees, prominent following fire, include trembling aspen, balsam poplar and white birch. To the west of the Mackenzie River, lodgepole pine and Alaska birch are found.

In the north, there is an increasing trend toward domination by black spruce and bogs. The bogs range in composition from grass and sedge through sphagnum moss. Particularly common are tussock sedge areas with sphagnum moss and many low ericaceous shrubs. Among the more usual shrubs are dwarf birch and Labrador Tea, on both bog and upland sites. Several species of willow occasionally cover large expanses along rivers and around bogs and marshes. These are important for moose. Shrub alders are also found.

The northern limit of tree growth is called the tree-line. Its position is determined mainly by climate; the average temperature for July must reach at least 10°C for trees to grow. Soils also play an important role. South of the tree-line, absence of trees usually reflects poor soil conditions. Even so, stands of black spruce can occur on permafrost. Besides the northern Arctic tree-line, there is also an alpine tree-line at about 1000 m above sea level, or lower to the north.

Identification of tree species is often difficult in the North. Typical western species mix with typical eastern species to form hybrids and intermediate forms. Examples are: lodgepole pine and jack pine, black cottonwood and balsam poplar and Alaska birch and paper birch. The spruces found in the North also differ from the same species found to the south and east. Hemlocks occur in the southwest part of Yukon near the Pacific Ocean.

7.2.4 Timber Harvesting and Regulation

White spruce is the most useful species, especially favoured for lumber and piling. The best stands are found on the alluvial flats of rivers, where excellent growing conditions and natural fire protection have allowed trees to live for more than 150 years and to reach sizes which would be considered large even in southern parts of Canada. It is not uncommon to find spruce over 60 cm in diameter and 30 m tall along the Lower Slave River in Mackenzie District or on the Liard River in Yukon and N.W.T. The volume of some white spruce stands can run up to 400 m^3/ha.

Pine (both jack and lodgepole) cover thousands of square kilometres north of 60°N. Individual trees seldom exceed 35 cm in diameter; however, the wood is used for lumber, mine timbers, piling and fuel. It is possible that pine trees may occur in sufficient numbers to maintain a pulpmill on the Liard River.

The largest species is balsam poplar which can attain a diameter beyond 90 cm. Balsam poplar can be peeled for plywood, but so far this has not been commercially feasible in Yukon. Poplar stands are restricted to the southern half of Yukon and the southern third of Mackenzie District, NWT.

Mines have been the big users of wood. Often the development of a mine was dependent to a large extent on the availability of mine timbers. Modern buildings are built on pilings so as to be separated from the frozen ground by a metre or more of open air.

In recent years there has been a marked increase in the number and size of forest operations in the NWT, and the demand for timber is continuing to increase. However, forest production has been geared to supply limited local markets and a portion of the NWT's requirements is still supplied from the south. This, however, is not indicative of what the northern forests could actually produce if called upon, and forest-based industries would appear to have considerable potential for future development. It is estimated that the softwood allowable cut for the NWT could approach one million cubic metres annually, although full development of this potential will depend upon the establishment of economic markets and transportation facilities.

Precise projection of forest productivity in the region is not possible, since there is not as yet a comprehensive forest inventory. However, the major areas of standing timber have been identified through a number of special studies. An inventory of the Slave River Forest Management Unit has been completed, and one of the Liard is in progress. It is estimated that there are approximately 100,000,000 m^3 presently along the Mackenzie River system from Fort Smith to the Mackenzie Delta, plus an additional 45,000,000 m^3 along the Liard River from the 60th parallel, for a total 145,000,000 m^3 of potentially merchantable timber. These are conservative estimates, but they do indicate a resource of potential value. The estimates are based on trees of sawtimber size and do not include smaller trees potentially usable for fibre or energy biomass production.

All figures on growth are sketchy. For the Liard Valley, estimates range from a mean annual increment for mixed sawlogs of 1.3 m^3/ha to 2.1 m^3/ha, depending on size, to a value for mixed pulpwood up to 4.1 m^3/ha.

In Yukon, the total wood volume is approximately 253,507,000 m^3, composed of 214,657,000 m^3 of softwood and 38,849,400 m^3 of hardwood. The potential annual harvest is calculated at 3,086,531 m^3. This combination of pulpwood and sawlog stands will permit an annual combined production of 396,443 m^3 of lumber and 453,592 tonnes of pulp (or 907,185 m^3 tonnes of newsprint in place of the pulp production). Yukon wood reserves will handle several large sawmills and at least two pulpmills of 680 tonnes capacity (or two newsprint mills of 1500 tonnes capacity).

Timber harvesting in the North is controlled by the *Territorial Timber Regulations*. Each person or company must obtain a permit to cut a tree except for the following:

- a trapper, a prospector or a scientist, who may cut a quantity of fuel wood;
- a householder, who may cut two Christmas trees; or
- a holder of a permit or licence issued in accordance with the *Territorial Land Use Regulations*.

Permits are issued without payment of dues to:

- an educational, religious or charitable institution, or a hospital in either territory;
- any federal, territorial or municipal government;
- any resident to cut 90 m^3 (stacked) of fuel wood for his own use; or
- any person to clear land.

Regular permits are issued for sawtimber to a maximum of 15,000 m^3 of wood at a rate of 20 cents per cubic metre. Other rates are applicable to special products or classes of timber.

The lack of attention to forest regeneration after logging is of some concern. It is important to ensure the establishment of a new crop of trees. Until the present, protection of the environment has not been a major concern in connection with timber harvesting. The regulations do provide that no timber be cut within 60 m of a public road or the shore of a lake. The forest officer has the power to ensure that the timber is cut in a satisfactory manner and that debris resulting from the cutting be disposed of satisfactorily.

7.2.5 Fire Protection

Responsibility for forest fire management rests with INAC, which administers existing territorial ordinances.

Forest fire management in the territories presents some challenges which are unique to the North. First, the climate is very dry; consequently, vegetation during the summers is highly combustible. Secondly, the North is sparsely populated, making fire detection difficult and firefighting an expensive process.

The stated aim of forest fire management policy is "to reduce wildfire damages to the level consistent with the present and future needs of the people and use of the renewable resources".

Forest Protection Ordinances provide authority to prosecute individuals for the careless handling of open fires and the deliberate setting of fires. They also allow for the conscription of members of the general public in times of forest fire crises. A permit is required during the fire season (normally May 1 to September 30) for any open fire other than a small fire for cooking or warmth.

Until the spring of 1981, the North was divided into three priority zones, plus an unprotected area. The highest priority (Zone 1) was assigned to areas adjacent to main communities. Zone 2 included national parks, areas adjacent to roads and commercial waterways, mines, lodges and small settlements, and identified stands of merchantable timber. Zone 3 included wildlife sanctuaries, important trapping areas, recreational lands and important watersheds.

Due to an exceptionally bad fire season in the NWT in 1979, a new forest fire management policy was embarked upon. It came into effect May 15, 1981. This policy was designed to improve existing firefighting procedures as well as to increase community involvement in forest fire control operations. The new policy divides treed lands in each territory into a "fire attack zone" and an "observation zone". Fire attack zones include areas around the communities, power and communication facilities, special trapping areas, parts of the NWT caribou winter range, lands containing merchantable timber, valuable watersheds and areas subject to erosion damage.

Observation zones include treed areas outside the fire attack zones, where user intensity is low and where fires may be beneficial or at least neutral.

Fires in the fire attack zones will receive strong and rapid initial attack to keep them from spreading. Those in the observation zones will not be fought except under special circumstances.

Altogether, the fire attack zones encompass 251,875 km^2 (approximately 40 per cent of the treed area) in the NWT and 145,040 km^2 (approximately 29 per cent) in Yukon.

For the years 1975-83 lightning caused 66 per cent of the fires and was responsible for 97 per cent of the area burned. Virtually all lightning-caused fires occur during the three summer months of June, July and August.

Since then, the expanded territorial road system, the emphasis on development and exploration, the growing tourism and recreation industry, and a general increase in population have resulted in an increase in the incidence of fires caused by people. As well, the additional use of outlying areas by individuals and industry enlarges the area where immediate response to outbreaks of fires must be made.

The new wildfire management policy anticipates an increase in community participation in firefighting activities. To this end, Community Fire Councils have been established throughout northern communities. The program calls for an intensification of local training programs, as well as the utilization of locally-based enterprises to provide support services for firefighting crews. At the same time, heavy reliance is placed on aircraft for detection and fast action to control the fires.

It is recognized that in the North, as in most of Canada, fire is a natural ecological factor. Wildfires have contributed to the present mosaic of vegetation, with its variations in species and age. Nevertheless, a recent report to the government has pointed out that in terms of human lifespan, fire can utterly destroy timber resources and caribou winter range. Lichens, an important winter food of caribou, do not reach a state of abundance until 50 years after a fire.

While the "normal" rate of burn in the North is about one per cent per year (less in the South) this rate is acceptable only if the fires are widely scattered in time and space.

7.3 Wildlife

7.3.1 General characteristics of the northern biological system

The North is characterized by a highly specialized fauna and flora. Features which exert important influence on wildlife found in the North include seasonal energy inputs from the sun, low precipitation and the relatively recent recolonization of the area following retreat of the continental ice 8000-10,000 years ago. As a result of these environmental controls, a limited number of plant species has developed.

Plants not only provide food for animals, but also help create environmental diversity, allowing different animal species to co-exist in a given area. The limited number of plant species is, therefore, one reason for the absence of many animal species from the Arctic and the generally low density of species which do occur in this vast area.

However, it would be wrong to equate this overall low density with a notion of absolute biological scarcity. Indeed, huge herds of caribou, very large flocks of geese and colonies of sea birds, and enormous schools of harp seal, pods of whales and herds of walrus represent impressive concentrations of wildlife.

The fact that many of these animals are migratory reflects the highly seasonal nature of the region's energy input from the sun. Thus, to take advantage of the favourable seasons and to offset the limited food supply at other times, many arctic species are subject to migration. Those which remain in the North have developed special adaptations or are supported by marine food stocks which are less affected by seasonal variations.

An unexpected feature of the northern biological system is the relatively high productivity of the arctic seas. The concentrated schools and herds of whales and walrus, and the ubiquity, if not abundance, of seals, combined with the large body size of these mammals suggest a high level of marine productivity. As on the land, however, marine plants have a very short growing season. The marine environment in the Arctic is also characterized by a relatively small number of fish species; surprisingly a diversified marine mammal fauna exists in the polar seas.

As a rule, high latitude wildlife has a slower growth rate than similar populations in more temperate regions. The slower growth rate usually results in later sexual maturity and lower fertility. Some compensation occurs because arctic animals often attain larger body size and may also live to greater individual age. The slow growth rate is generally attributed to the short growing season and the limited availability of food throughout the year. Reproductive success is highly variable in most terrestial arctic species because of the effects of weather extremes such as unusually late springs, as well as extreme fluctuations in food supply which may be weather controlled.

7.3.2 Important Northern Species

In this brief review the importance of species is reckoned in terms of economic value (commercial and subsistence), role in the maintenance of arctic ecosystems and in the case of rare and endangered species, importance as national and international resources.

7.3.2.1 Terrestrial mammals

Moose

Accurate estimates are not available for the population of moose in the NWT and only an approximate estimate of 30,000 animals has been made for Yukon. Moose populations fluctuate over time, influenced by man-induced and natural causes.

Caribou

There are three main groups of caribou: the barren-ground caribou; the woodland caribou; and Peary caribou.

Barren-ground caribou

This group occurs in the mainland and Baffin Island portions of the NWT and in Yukon. Total population estimate, including such well-known herds as the Porcupine Herd in the Yukon and the Kaminuriak Herd near the Baker Lake area is about 680,000, using the aerial photographic technique.

Causes of population change include a variety of environmental circumstances and variations in predation and hunting pressure. Being migratory, barren-ground caribou may be adversely affected by habitat alteration at any point in their range.

Woodland caribou

Migration in this caribou is quite restricted compared to the migrations of the barren-ground caribou. The population estimates for Yukon are tentative, at about 5000 animals; even less is known about population size and distribution in the NWT.

Peary caribou

This is a smaller sub-species found in scattered small herds over most of the arctic archipelago. Local populations on the western Queen Elizabeth Islands are near extinction due to a series of adverse winters. Total population is not well known but is probably between 10,000 and 15,000 animals.

Muskox

The distribution of muskox includes the arctic islands (except Baffin Island) and areas of the mainland north of the tree-line from near Paulatuk in the west to the central region of the Keewatin District and north to Boothia Peninsula.

Muskox populations enjoyed total protection from hunting from 1917 to 1969. Today they are making a comeback in the Arctic and probably number between 40,000 and 50,000 animals, with a large proportion of this number occurring on Banks Island in the N.W.T. In Yukon, muskoxen were exterminated at the turn of the century. They were subsequently re-introduced to Alaska's Arctic Wildlife Range, and some have recently roamed into Yukon.

Wolf

The timber wolf and tundra wolf are widely distributed throughout northern Canada.

Populations are generally low, ranging from one to twelve animals per 1000 km^2 in a variety of arctic settings. They become less abundant in the northerly parts of their range.

Fox

The arctic fox and the red fox are generally restricted to tundra adjacent to sea ice areas and to wooded areas of the North, respectively.

Foxes have a very high reproductive potential; numbers fluctuate very widely over an apparent four to five year cycle of abundance related to lemming cycles for arctic fox in tundra areas and a 10-year cycle for red fox in boreal forest areas. Estimates of total population are not available but numbers of arctic fox harvested fluctuate between 10,000 and 40,000 annually in the NWT. Red fox are harvested only to a limited extent; approximately 1000 pelts are marketed annually in the NWT.

Muskrat

This species is distributed widely in the Mackenzie District of the NWT. As in the case of the fox, population levels are reflected in the harvest, which ranges from around 46,000 to 276,500 annually in the NWT, averaging about 170,000 animals with about two thirds coming from the Mackenzie Delta. In Yukon, 19,339 pelts were taken in 1983 mostly from Old Crow Flats at an average price of $3.25 each.

Beaver

Beaver are found widely in forested areas of the North.

Numbers of skins traded have ranged between 3000 and 10,000 per year, with an unknown additional number used in the local economy for clothing and handicraft production. In the N.W.T. figures for 1982-83 show that 2,714 pelts were taken; in Yukon 701 pelts were taken in 1983.

Wolverine

The present status of this animal in the Canadian North is uncertain. No population estimate is available, although the number traded has averaged 77 annually in the NWT and between 100 and 300 in Yukon in recent years.

Lynx

This animal is found primarily in mixed coniferous-deciduous northern forested regions, only rarely venturing north of the forest margin. The population is cyclic in relation to its prey, the varying hare and in consequence the yield is extremely variable, ranging from a low of about 600 to as many as 6000 skins.

Polar bear

This important circumpolar species is rarely found any distance from the sea, as its major prey is the ringed seal. A very rough, perhaps minimal, estimate of polar bears in the Canadian Arctic might be 6000 to 7000. Approximately 600 bears are harvested annually by quota.

Dall's Sheep

This species is found throughout the mountainous ranges of Yukon and the western NWT. It is a highly prized trophy species, with some 1000 sheep taken annually. In addition, some populations are hunted for subsistence purposes.

Grizzly Bear

The grizzly is found throughout Yukon, the Mackenzie Mountains, the Mackenzie Delta area and on the barrens of the NWT mainland. In the latter area the numbers are very low, but apparently expanding. In Yukon and some areas west of the Mackenzie River in the NWT, this species is hunted as a big game trophy species.

7.3.2.2 Marine mammals

Although most marine mammals in the North are migratory, some are year-round residents, well adapted to the ice environment, providing the prehistoric and historic basis for human habitation of the Arctic Coastal Region.

Beluga

This is a common whale in the eastern and western Arctic regions, reappearing each spring as the ice breaks in May or June. Some beluga winter in areas of persistent open water (polynyas); others, from the eastern Arctic, probably undertake long-distance migration to unknown areas of Baffin Bay and the north Atlantic, and from the western Arctic, winter in the Bering Sea or open water areas further north. A population number of 24,000 to 28,000 beluga has been suggested for the Canadian Arctic, of which 11,000 are found in the Mackenzie Delta-Beaufort Sea region and the remainder in the eastern Arctic.

Narwhal

This species is restricted to the eastern Arctic as far west as Somerset Island. The population size is uncertain, but large numbers (20,000 to 30,000) have been reported in the Lancaster Sound region. Narwhal hunting has a high cultural value among the north Baffin Island Inuit.

Bowhead

This species is rare; population estimates indicate an eastern population in the hundreds and a western population of approximately 4,000.

Walrus

In Canada, the walrus is found predominantly in the eastern Arctic. There are no reliable population figures available, but estimates range from 12,000 to 18,000 animals.

Ringed seal

This is the smallest seal in the Canadian Arctic, but the most widely distributed. Ringed seal are present throughout the year, maintaining breathing holes through the winter ice and breeding in birth lairs constructed beneath the snow on the winter sea ice. This species is by far the most important seal species, as it is the main prey of polar bears and the major species harvested by the Inuit. Approximately 80 per cent of the annual commercial seal harvest is attributable to this species.

Bearded seal

This is a widely dispersed species of large seal, which makes only limited use of winter breathing holes in the sea ice, and prefers areas of open water at the edge of the land-fast ice, especially where pack ice occurs.

There are no reliable population estimates for this species.

Harp seal

Harp seals are summer migrants into the eastern Canadian Arctic, arriving in July and August. The North Atlantic harp seal stock numbers about 1.25 million animals. There are various estimates of the numbers of migrants, ranging from perhaps 15,000 to 20,000 animals entering Lancaster Sound to 2000 to 5000 entering Hudson Strait each year.

Other marine mammals

Two other seal species have localized and rare status in the eastern Canadian Arctic: the harbour seal and hooded seal. The former is found in Hudson Bay and some localities in Baffin Island, often in or near ascending rivers, sometimes wintering in fresh-water lakes or rivers. The hooded seal is more rarely sighted, from Jones and Lancaster sounds, south to Hudson Bay. Several whale species other than those mentioned are occasionally found in eastern arctic waters. Killer whales occur in Lancaster and Jones sounds, at the eastern end of Hudson Strait and off the east coast of Baffin Island.

7.3.2.3 Birds

About 200 bird species breed in the closed forest areas of the western Arctic and the southern edge of the NWT; this number is about halved in the open forest zone near the tree-line, and halved once again in the true Arctic.

Most arctic species return to the North to breed about the time the snow melts from the land. A very few species arrive before the end of winter, and fewer still spend the whole year there.

One characteristic of many arctic birds is their concentrated occurrence at certain favourable locations. Thus, goose colonies may have about 400 nesting pairs per square kilometre and colonies of sea-birds may number in the hundreds of thousands on very restricted cliffs or island sites.

Snow goose colonies on Banks Island, near Eskimo Point and on the Great Plains of the Koukdjuak are examples of high nest density areas. During the fall staging period in the western Arctic, snow geese gather either in the Mackenzie Delta or in the Yukon North Slope in the hundreds of thousands.

Colonies of seabirds (black-billed murres, black-legged kittiwakes and northern fulmars) may number in the hundreds of thousands at preferred nesting sites. Prince Leopold Island is one such important site.

Especially favourable habitats for birds in the far North are provided by areas where marine currents favour high marine productivity; these include protected sea shorelines, the deltas of rivers and the myriad small tundra ponds.

Northern birds are often larger in body size than related subspecies (or species) found to the south. There are other arctic adaptations, such as frequent years of resorption of eggs if nesting is shortened by adverse weather or other conditions, non-breeding, ability to produce a second clutch of eggs in favourable years, arrival at the nesting grounds in spring already paired, and polygamy.

Northern birds often undergo very wide population fluctuations from year to year. The critical nature of the short breeding season, the short time available for fledging the young and unusually early and severe wintry storms can cause poor breeding success or high mortality among young birds.

Species hunted for food in the North include Canada goose, snow goose, brant, white fronted goose, common and king eider, pintail, old squaw, several species of scoter duck, mergansers, loons, grouse and ptarmigan. Eggs of many sea birds, such as gulls, murres, dovekies and ducks that nest in colonies are also gathered.

7.3.2.4 Fish

About 70 species of fish are found in the coastal and inland waters of the Canadian North, of which about 15 are important to domestic, sport or commercial fisheries. Though quantities often appear great, the stocks have a low capacity to reproduce and grow and may be vulnerable to any intensive sustained fishing. There are very few offshore marine species presently utilized in the Canadian North, but some development in that direction may occur in the future.

Arctic char

The arctic char is a widely distributed species, found in lakes, rivers and coastal waters. It is important commercially, as a sport fish and in the domestic economy of the North.

Whitefish

The main fishing activities for whitefish, both commercial and domestic, are in the Mackenzie River Valley, immediately south of Victoria Island on the mainland and inland from the west coast of Hudson Bay. No reliable data are available, but the annual harvest is probably about 450,000 kg.

Lake trout

This species is taken together with whitefish in the fisheries described above. There are no reliable figures on the size of the domestic harvest. The very large size of trophy fish obtainable in under-exploited lakes makes sport fishing for lake trout attractive. However, the slow growth rate of the species suggests the need for a very low intensity of this activity.

Northern pike

This species occurs throughout Yukon and in almost all mainland regions of the NWT. It is an important sport fish and great potential exists to expand this aspect of the fishery.

Inconnu

This is a fast-growing fish found in the Mackenzie River drainage basin. About 91,000 kg of inconnu are fished commercially each year on Great Slave Lake, a volume which has remained fairly constant since the beginning of that fishery in 1945.

Walleye

This species occurs throughout the Mackenzie Valley drainage system, although it is only abundant in the most southerly part of the area.

The walleye is a popular sport fish in Canada. In the North, where access to many lakes is very difficult, they are abundant enough that there is considerable scope for expansion of this fishery in the future.

Grayling

Although widely distributed, this fish is small and slow-growing. It probably has greater sport than commercial value but local stocks in Great Slave Lake have been depleted by sport fishing. Commercial fishing is limited to those netted while fishing for preferred species such as whitefish.

Salmon

In Yukon, there are five species of salmon, with two, the chinook and chum salmon having fairly extensive distribution and local importance for food, recreational fishing and commercial purposes.

Other species of fish

There are several species of fish which have value in the local economy but restricted distribution in the North. Capelin, Atlantic cod and Greenland halibut are found in eastern Arctic marine waters and are used to a limited extent. Sculpins of various species occur in all inshore arctic waters and are sometimes utilized as food. In the western Arctic, herring are taken in marine waters and burbot and suckers in fresh-water locations.

7.3.2.5 Invertebrates

These forms of life are important largely because of their ecological role in providing food for all higher forms of life (i.e. fish, mammals and birds) which assume visible importance to man. However, there are some invertebrate species of evident economic importance.

Shellfish

There are only a few species which are regular items of diet. In some coastal areas, blue mussels, abundant at low tides, can be a useful supplementary fresh food source. Sea-urchins are used in some regions, as are the intact bivalve molluscs found in walrus stomachs.

Crustacea

The most important crustacean resource, probably worth several millions of dollars annually if exploited, is the salt-water prawn found in certain waters off Baffin Island, Ungava Bay and perhaps elsewhere in the North. Test fishing for these "shrimp" has already taken place.

Non-economic species

The rich marine life of the North is supported by the invertebrate species found in the marine water column. Most of these forms occur either in the top few metres of the sea as plankton or on the sea bottom as benthos. The benthos in northern seas is especially productive and consists of a constant population throughout the year. Plankton, on the other hand, varies seasonally in abundance.

Insects

About 1000 insect species occur north of the tree-line, and ten times that number in the region immediately to the south of the tree-line. About half the species found in the tundra areas belong to one order of insect — the two-winged flies (Diptera), which include mosquitoes, blackflies and midges. The next most common order of insect is the one which includes bees and wasps (Hymenoptera). There are about twenty species of butterfly found in the tundra, though some orders (e.g. the dragonflies and crickets) are entirely absent.

7.3.3 Importance of Wildlife

In addition to their economic value, the wildlife resources of the north are of great cultural significance, ecological importance and scientific interest. It is difficult to quantify even the economic dimension due to incomplete reporting systems and the problems of assigning market values to products used in the domestic economy.

7.3.3.1 Economic considerations

Fur trading

The total value of furs traded by trappers in the NWT in 1982-83 was approximately $2.6 million. In addition, many of the animals trapped provide a source of fresh meat to the families of the trappers and a number of skins are not traded, but utilized in the domestic economy for handicraft production. In the NWT, 26 per cent of the 3167 registered trappers earned more than $8,000 from fur sales in 1982-83. The total value of furs traded each year in Yukon is around $1.5 million. About 800 people are engaged in trapping as registered trapline holders or as assistants. While the mean income from trapping is less than $2,000 per person, a considerable number of trappers make their living by this means and many earn $20,000 to $30,000 per season.

In the NWT, a large part of the income from fur is due to the harvest of ringed seal which was worth $105,143.50 in 1982-83. Other seal skins are used in the local manufacture of footwear or clothing. Polar bear added a further $168,488.25 in 1982-83 to the fur harvest.

Commercial fishing

About 1 613 metric tonnes of freshwater fish were landed in 1982 in the NWT commercial fishery, for a value of $1,674,000. In Yukon, the commercial fishery is on a smaller scale; chinook and chum salmon, lake trout and whitefish are harvested for local markets.

There is a limited sale of marine mammal products (mostly whale skin), which probably amounts to less than $25,000 per annum. The potential value of the underdeveloped shrimp fishery off the coast of Baffin Island is estimated to be around $3 million a year, although it might not be sustainable at the initial high catch rates. In addition, there are potential cod, greenland halibut and salmon fisheries totally undeveloped; the potential value of the salmon fishery in Hudson Strait alone has been placed at about $1 million annually. Difficulty in access is a factor in the underdevelopment of these resources. Large vessels are necessary except for salmon fishing, the water is very cold and deep and there is a lot of tide.

Subsistence economy

This is the hardest aspect to quantify, yet it is undoubtedly the most important both in economic and non-economic terms to the local society.

The data in Table 7-2 are from a detailed breakdown of the sources of income of two communities in the eastern Arctic, Pond Inlet and Grise Fiord. It will be noted that there is a considerable difference in the dollar value ascribed to hunting, trapping and other income in kind in the two communities. This is typical in that the range of dollar equivalent of income in kind from community to community throughout the North is subject to extremely wide variations.

In the NWT as a whole it is estimated that some 2.8 million kg of fish and meat are locally produced and used; this would have a dollar value of between $12 and $13 million. If uniformly divided among all residents of communities smaller than towns, it would represent about $500 per capita, about half the per capita contribution of wildlife resources to the income at Pond Inlet and only about one-fifth that of residents of Grise Fiord. Estimates of the number of fish and wildlife harvested for subsistence purposes in Yukon are not available; however, compared to the NWT, there is generally less dependence on these resources on the part of the native population.

Assuming the approximate validity of these numbers, many members of the northern community must make considerably less than the average of $500 per annum. Some of the non-economic values placed upon fishing, hunting and trapping are discussed in Section 7.3.3.3.

Tourism

It is assumed that a large number of tourists venturing north do so for the scenic or "exotic" value of the visit; this may entail an attraction for the "wilderness experience", whether merely viewing "unspoiled" nature or for other uses of wildlife, e.g., sport fishing or hunting.

Most of the available tourist accommodation, whether at community-based motels, hotels or private homes, or in fishing or hunting lodges or serviced campsites, is fully utilized during the summer season and significant growth is reported each year in this sector of the northern economy.

The estimated 44,000 visitors to the NWT in 1982 spent an estimated $40 million in the territory. In Yukon, where more visitors arrive by private automobile, income generated by tourism continues to increase, with an estimated $51 million spent in 1981 in the territory by about 386,000 people.

7.3.3.2 Scientific considerations

Scientific study of arctic biological systems is currently of great importance. The natural condition of large areas of the globe is being altered by environmental changes before man has had an opportunity to study and understand these unique areas and resources. There is also an equally pressing need to gather knowledge in order to better manage and protect the Arctic from serious damage at a time when the pace of development in the North is increasing.

Although the work of making inventories of species to answer the question "what is there?" has been carried out over much of the North, basic questions remain. These concern numbers, life history, physiology and behaviour, often in respect to very common and widespread species.

7.3.3.3 Cultural values

There are a variety of benefits derived from use of wildlife by native and non-native residents of the North. Many non-native residents of the territories see hunting, fishing and the wilderness experience as one of the advantages of living in the North; in this case, as with native northerners, they value wildlife for the contribution it makes to their lifestyle. There are recreational rewards, including psychological and emotional ones, involved in this lifestyle choice and the contribution it makes to a decision to continue living in the North is significant in many cases.

For the native people, the recreational value of wildlife is also very great, even though they obtain significant economic value from harvesting fish, fur and game on a year-round basis. The "lifestyle" question, however, is as much a cultural as an economic matter for native people. It is important to realize that native cultures are rooted in a comprehensive and complex relationship linking man and nature, where nature includes wildlife, rivers, lakes, landforms and even the sky and the wind. Thus, native concerns about wildlife involve the very question of identity. To continue hunting, even when the economic need is minimal, has importance for many reasons. Social transactions, for example, often involving gift-giving or ceremonial acts, utilize meat or parts of animals and the social development of young people is marked by their acquisition of traditional skills usually associated with procurement or processing of natural products. In addition, the native cosmology is based upon events in the natural world which are significant to members of a hunting society. The recreational aspect of native hunting thus involves complexities simply not found in recreational hunting by non-natives, the most obvious of which is the spiritual component.

7.3.4 Threats to Wildlife

Threats are not wholly the works of man; in the North, weather conditions are very critical to the survival or population status of many species and some characteristics already noted, such as annual non-breeding in sea birds, is climate-controlled. Caribou, especially Peary caribou on the arctic archipelago, is another species whose populations may decline precipitately because successive years of inclement weather affect calving success or winter feeding.

Hunting provides another threat, especially when concentrated on a particular local population situated near a permanent settlement. However, the potential for recovery exists in these situations if no other environmental change has occurred.

The largest threats are often seen to occur as a result of industrial development because of the intensity, scope and long-term nature of the resulting impacts. Mining activities, major construction projects, hydroelectric developments and transportation corridors fall into this category. The nature of the threat is often stressful in a variety of ways, including landscape alteration and destruction, air, water and noise pollution and increased hunting and trapping by larger human populations. All these potentially harmful effects can to some extent be mitigated if industrial activities are planned and executed with full appreciation of the responsiveness of the arctic environment to disturbance.

In addition, regulations concerning the protection of wildlife and its habitat should transcend the political boundaries of province and territory.

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Table 7-1
Location, operator and installed capacity of existing hydroelectric installations

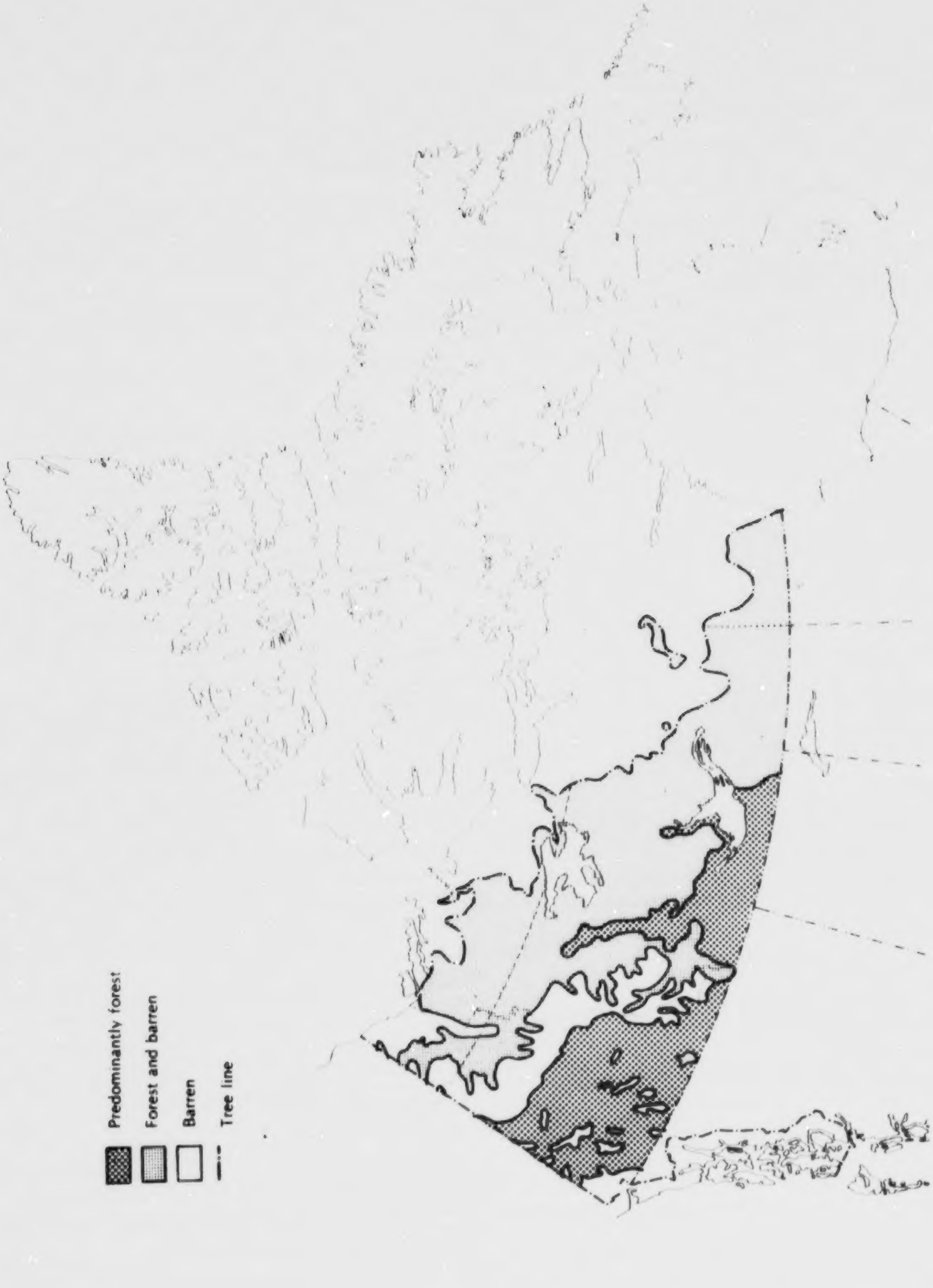
Territory	River	Name	Operator	Capacity (MW)
Yukon	Yukon	Whitehorse Rapids	NCPC	40
	Aishihik	Aishihik	NCPC	31.0
	Mayo	Mayo	NCPC	5.1
	Porter Creek	Porter Creek	YE	1.0
	McIntyre Creek	McIntyre Creek	YE	0.65
NWT	Snare	Snare Rapids	NCPC	7
	"	Snare Falls	NCPC	7
	"	Snare Forks	NCPC	9.6
	Talston	Twin Gorges	NCPC	20.8
	Yellowknife	Bluefish Lake	C	3.2

NCPC	Northern Canada Power Commission
YE	Yukon Electrical Company
C	Cominco

Table 7-2
Estimated sources of income per capita for two typical Arctic communities

	Grise Fiord	Pond Inlet
Population	ca 106	ca 705
Wages/Salaries	$403,000	$2,010,000
Transfer payments	15,000	198,000
Handicrafts (carving)	10,000	
Hunting, fishing and trapping, and income in kind	250,000	618,000

Figure 7-1:
Forest Regions


Predominantly forest
Forest and barren
Barren
Tree line

8.0 Non-Renewable Resources

8.1 Mines and Minerals

8.1.1 General

Northern Canada is regarded as a major potential source of non-renewable resources. Historically mining, especially of gold and silver and more recently of lead and zinc, has been the basis of non-renewable resource development. In the last two decades however, the search for oil and gas in both Yukon and the NWT has assumed increasing importance. The development of non-renewable resources in northern Canada suffers from numerous disadvantages relative to southern Canada. These include remoteness, severe climatic conditions, transportation problems, lack of inexpensive electric power and high labour costs. In addition, mining activity is prone to global price fluctuations, while the level of oil and gas exploration activity in Canada is increasingly influenced by political and other factors.

The Klondike Gold Rush of 1898 is generally regarded as the first major period of mining activity in northern Canada. However, gold had first been reported at Fort Selkirk in 1850 and mineral exploration had been proceeding for over two decades prior to the Klondike discovery, following the collapse of the California boom and the migration of prospectors to British Columbia and Yukon. The Klondike Gold Rush, like others before it, was short-lived and prospectors soon moved on to the Alaskan gold fields. In the Klondike, placer gold production quickly became dominated during World War I by a few large operators, such as the Yukon Consolidated Gold Corp. By the middle of the present century placer gold production was declining and by 1966, when most placer operations in the area finally ceased, the Klondike had produced over $200 million in gold. Shortly after the gold rush began some miners had started to mine coal in the area to feed the stoves of Dawson; coal was valued at $15 a ton whereas gold was worth $20.67 an ounce at the time.

Silver was the second metal to be mined in Yukon in the early days of its history. Silver was discovered in the Mayo area in 1906 near the present town of Elsa. Production began in 1912. Then the discovery of rich silver-lead deposits at Keno Hill in 1919 led to mining production the following year.

In the NWT, mineral production began in 1876, when 14.5 tonnes of mica worth $120,000 were mined from the Cumberland Sound area of Baffin Island. Radium was discovered in 1930 at Port Radium on Great Bear Lake and the Eldorado Mine was brought into production in 1932. This was followed by the discovery of lode gold deposits in the Yellowknife area in 1933 and gold production commenced at the Con and Negus Mines shortly before World War II.

Also of significance was the discovery of an oilfield at Norman Wells in 1920 by Imperial Oil. By 1932 a refinery was in operation to provide for the mining activity on Great Bear and Great Slave lakes and for the various Mackenzie Valley settlements. By 1939 petroleum production was 20,000 barrels (2750 tonnes) per year, rising to 1.2 million barrels (165,000 tonnes) in 1944.

In the decade following the end of World War II, mineral production in both Yukon and the NWT increased significantly. In Yukon, United Keno Hill Mines Ltd. was formed in 1948 to develop the silver-lead-zinc deposits around Elsa, while in the NWT gold mining escalated in the Yellowknife area with the opening of the Giant Yellowknife and Discovery mines.

In the last two decades, however, the development of the non-renewable resources of Canada's North has increased dramatically. This can be attributed to:

(1) the development of a substantial lead-zinc deposit at Pine Point on the south shore of Great Slave Lake, 80 km east of Hay River, more recently at Nanisivik, 29 km northeast of Arctic Bay on eastern Baffin Island, and most recently at the Polaris Mine on Little Cornwallis Island;
(2) the quest for non-ferrous metals such as tungsten and uranium in both Yukon and the NWT;
(3) following the rise in gold prices on the world markets, an upsurge in placer gold activity in Yukon in the mid-1970s, involving reworking of old tailings and commencement of operations in previously unworked high-level gravels;
(4) rising gold prices, followed by a gradual increase in gold exploration and development of the Camlaren Mine (closed in 1981) northeast of Yellowknife, the Cullaton Lake and Shear Lake mines west of Eskimo Point and the Lupin Mine near Contwoyto Lake;

(5) the dramatic resurgence of oil and gas exploration following the discovery of Prudhoe Bay in Alaska in 1967-68. Two new gas fields were placed on production in the 1970s, Beaver River and Pointed Mountain (in the southeastern Yukon and southwestern Northwest Territories respectively), and exploration and discovery of oil and gas in the Mackenzie Delta, the Arctic Islands and the Beaufort Sea has followed. Some exploration has also been carried out in Lancaster Sound, the eastern entry to the north-west passage, and in waters between Greenland and Baffin Island.

Mining is traditionally a major industry and economic stimulator in both Yukon and the NWT. In Yukon 3.8 per cent and in the NWT 14.7 per cent of the labour force were employed directly in the mining industry in 1983. An additional 750 people were seasonally employed in the Yukon placer industry.

The value of mineral production in Yukon in 1983, shown in Table 8-1, amounted to $59,362,000. Gold was the largest revenue producer followed by silver, sand and gravel and lead. In the NWT, minerals contributed $532,181,000 to 1983 income. As shown in Table 8-2, zinc ranked as the most valuable, followed by gold, sand and gravel, silver, tungsten trioxide and arsenic trioxide.

These production levels represent a very significant part of Canada's total output. Most (97 percent) of the tungsten, 27 per cent of the lead, 23 per cent of the zinc, 17 per cent of the gold and 5 per cent of the silver produced in Canada come from the joint production of mines in Yukon and the NWT.

8.1.2 Government regulations, assistance and services (minerals, other than oil and gas)

The management of mineral resources in Yukon and the NWT is the responsibility of Mining Management and Infrastructure, INAC. For administrative purposes, Yukon and the NWT are divided into seven mining districts, each responsible for the administration and disposition of mineral rights within its district (Table 8-2). Regional and district geologists undertake mineral property examinations, collect rock and mineral specimens, advise industry, government departments and scientists on geological problems and undertake geological evaluations on mining developments when requested. A number of acts and regulations provide an administrative structure under which exploration and development can proceed in an efficient and orderly fashion and ensure the safety of mines and protection of miners.

In the NWT, the *Canada Mining Regulations* govern the disposal and exploitation of mineral rights. A prospector's licence, which is obtainable from any mining recorder for the NWT, is required in order to prospect, stake claims or acquire any mineral or exploratory right. Block-type claim staking is provided for a maximum area of 2582.5 acres. Claims are marked by four corner posts and boundary posts every 1500 feet. Work must be performed to the value of $2.00 per acre per year to maintain claims in good standing and leasing is mandatory after 10 years. Exploratory rights (prospecting permits) covering large areas are also available.

In Yukon, two statutes govern the administration and disposition of most mineral rights. The *Yukon Quartz Mining Act*, which governs hard-rock mining, provides for two-post staking of 51.65 acre claims with required representation work set at $100 per claim per year. Prospector's licences are not required, leasing is not mandatory after a specified time period and there are no exploratory rights granted. The *Yukon Placer Mining Act* controls placer mining operations of alluvial deposits of precious metals. Claims are staked along creeks or streams using surveyed base lines. Annual work to the value of $200 is required to maintain claims in good standing. Placer leases covering one to five miles are also available.

Other regulations made pursuant to the *Territorial Lands Act* are applicable to both territories. The *Territorial Dredging Regulations* apply to the operation of dredges on rivers in the Yukon and Northwest Territories and the *Territorial Coal Regulations* govern the administration and disposition of coal rights in the territories.

Another group of legislation deals with the safety of mines and protection of miners. The *Mine Safety Ordinances and Rules* ensure that safety inspections are made of all mines in Yukon. The NWT Government assumed responsibility for mines in its territory in 1980. The *Yukon Blasting Ordinance* governs procedures for underground blasting operations and the storage and handling of explosives. In the NWT this is regulated by the *Explosives Use Ordinance, Northwest Territories.*

8.1.3 Mineral exploration and production — Yukon

In 1983, the mineral production of the Yukon was dominated by the placer gold industry, which accounted for 85 per cent of the mineral produced (Table 8-3). The drastic decline in mineral production value from $169 million in 1982 to $59 million in 1983 resulted from the shut-down of all lode mines in the Yukon during the first half of the year. Yukon mineral production value declined to 0.8 per cent of the value of total Canadian metallic mineral production in 1983 compared with 2.45 per cent in 1982.

Whitehorse Copper Mines Ltd. permanently closed its copper mine near Whitehorse at the end of 1982 because of ore reserve depletion.

United Keno Hill Mines Limited resumed operation of its silver mine and mill operation in mid-July, 1983 after being closed since mid-July, 1982. Operations commenced at a production rate of two-thirds capacity using a workforce of 146 employees compared with 220 workers a year earlier. The tonnage milled in 1983 was 29,596 tonnes compared with 50 340 tonnes in 1982 and 60,700 tonnes in 1981.

Cyprus Anvil Mining Corporation reopened its Faro Mine in May 1983 to commence a two-year overburden stripping program which is expected to result in mill production of lead and zinc concentrate by late 1984 or 1985. A workforce of 215 persons removed 2.4 million cubic metres of overburden to the end of December, 1983. A total of 6.6 million cubic metres of overburden are to be removed from the Faro No. 3 ore deposit.

Three small new mines produced from high-grade silver veins. Springmount Operating Company produced 106.5 tonnes of ore at its Mount Keno property in the Keno Hill area and Dawson Eldorado Gold Explorations Ltd. mined 599 tonnes of ore at its Plata property. Archer, Cathro and Associates Limited produced 390 tonnes of ore from the Sadie Ladue vein in the Keno Hill area.

The Yukon placer mining industry consisted of an estimated 260 operations employing 750 persons on a seasonal basis. Production of crude or impure gold claimed for royalties increased 25 per cent in 1983 to 2,932 kg compared with 2,290 kg of gold in 1982. An additional 76 kg of placer gold was reported as sold to Yukon jewellery manufacturers or forwarded to gold refineries in 1983.

During 1983, 40 companies explored 68 properties of which 25 were explored for precious metals, 22 for lead and zinc, 13 for molybdenum or tin, 10 for tungsten and four for copper. Mineral exploration expenditures continued to decline during 1983 to an estimated $11 million compared with $22 million in 1982 and $50 million in 1981. The most active areas were in the Wheaton River area, south of Whitehorse, for gold-silver deposits; the Macmillan Pass area for tungsten, base metals and precious metal deposits; an area northwest of Carmacks for gold and copper deposits; the Dawson area for gold deposits and the Rancheria area, west of Watson Lake, for silver-lead-zinc, tin and copper deposits.

8.1.4 Mineral exploration and production — NWT

Mineral production in the Northwest Territories in 1983 was valued at $532 million compared with $468 million in 1982. Despite the increase in mineral production value, the continuing economic recession and concomitant low prices for base metals and tungsten combined to make 1983 a difficult year for some mines and mining communities in the territories. Gold production remained the bright spot in the industry, with an increase in production value of $62 million (67 per cent) to $153 million from the previous year.

Eight mining companies treated ore from 11 mines at 10 milling plants. Falling lead and zinc prices forced Pine Point Mines Limited to shut down on January 2, 1983. However, the mine resumed operation on June 15, 1983. Similarly, uneconomic tungsten prices forced Canada Tungsten Mining Corporation Limited to shut down its Cantung mine and mill operation at the end of January, 1983. The mine resumed production on November 28, 1983. Gold production was reduced at the Cominco's Con Mine because of a strike which lasted from mid-July to mid-September, 1983. Giant Yellowknife Mines Limited reduced gold ore production by 25 per cent at the end of the first quarter to extend the life of ore reserves.

On the positive side, both Echo Bay's Lupin Mine and the Cullaton Lake Mine increased their gold production. Echo Bay Mines Ltd. increased mill capacity by 20 per cent from 900 to 1100 tonnes per day. Cullaton Lake Gold Mines Ltd., following a successful production year, plans to increase mill capacity to approximately 360 tonnes per day in 1984 to accommodate ore production from its new Shear Lake Mine. Also, Giant Yellowknife Mines Limited commenced gold production at the Salmita Mine in August, 1983. Ore from Salmita was milled at the rehabilitated Tundra mill, 3 km to the south of the Salmita Mine. Terra Mines Limited, after a two-year period of limited production but intensive underground development and exploration, doubled the capacity of its Camsell River silver mill from 225 to 500 tonnes per day. In the High Arctic, operations at the two zinc-lead mines, Polaris and Nanisivik, continued successfully during the year despite low lead and zinc prices.

Production from the three lead-zinc mines (Pine Point, Polaris and Nanisivik) increased 7.1 per cent for lead and 4.7 per cent for zinc compared with the year despite the fact that Pine Point Mines Limited was closed for six months.

The mineral industry of the Northwest Territories accounted for 96.9 per cent of the tungsten, 26.5 per cent of the lead, 23 per cent of the zinc, 12.9 per cent of the gold and 4.6 per cent of the silver produced in Canada during 1983. This production accounted for 6.5 per cent of the value of Canadian metallic mineral production compared with 5.6 per cent in 1982.

The operating mines and mills employed 2,369 persons at the end of December, 1983. Of the 765 employees laid off through the closing of the Pine Point and Canada Tungsten mines, some 662 were re-employed when the mines reopened later in the year.

At year end 1983, Cullaton Lake Gold Mines Ltd. moved forward with pre-production development of the Shear Lake gold mine located some 5 km north of the Cullaton Lake Mine. A decline was driven through seven gold-bearing zones and drifts were extended from the decline toward the main shear zone, which is the production target zone.

At Cominco's Ptarmigan Mine, 20 km by road northeast of Yellowknife, ramping, drifting and bulk sampling were conducted. Despite encouraging results, a production decision was postponed because the Con mill was operating at capacity to process ore from the Con Mine.

Cadillac Explorations Limited's base metal-silver property, at Prairie Creek, on which a mine and mill construction was near completion during 1981, was placed on hold in mid-1982 without achieving initial production. At year end 1983, no new developments which would bring the mine into production during 1984 were apparent.

Terra Mines Limited completed 610 m of decline, raise and lateral development on its Bullmoose gold property, 80 km southeast of Yellowknife. Some 1,525 m of underground drilling on the No. 4 vein increased reserves to 630,000 tonnes grading 10.6 g gold per tonne compared with previous reserves of 22,575 tonnes grading 10.57 g gold per tonne. The company hopes to prove sufficient reserves to bring the property into production.

Mineral exploration expenditures continued to go down in 1983 to an estimated $18 million compared with approximately $22 million in 1982. Half of the expenditure was on gold exploration and gold property development with expenditures of $4 million on exploration for base metals and uranium. In 1983, there were more gold exploration and mine development projects (53) than base metal projects (19) and uranium projects (25) combined. Of a total of 115 properties explored, 44 took place in the Slave geological province (northeast Mackenzie District) and 40 were in gold exploration.

Gold exploration was concentrated in the Slave Province with other gold exploration scattered in the Keewatin and in the southern Nahanni area. Uranium activity is scattered throughout Keewatin with a concentration near Baker Lake, the Nonacho Basin and the Coppermine River area, east of Great Bear Lake. Base metal exploration is concentrated in the Nanisivik and Pine Point areas.

8.2 Oil and Gas

8.2.1 Introduction

In the late 1950s and early 1960s the government, recognizing oil and gas exploration and development as a valuable instrument for economic development in the North, evolved a series of policies to encourage and facilitate northern oil and gas exploration.

Two significant events influenced northern exploration in the late 1960s. One was the release of information concerning the magnitude of the discovery of oil and gas at Prudhoe Bay, Alaska. The second was the creation of Panarctic Oils Ltd. in 1967 to explore in the Arctic Islands. Most of the known potential oil and gas lands (some 243 million hectares) were held under exploratory permits by industry (186 million hectares) from 1968 to 1972.

In 1976, the federal government announced its "National Energy Strategy for Self-Reliance", an assessment of Canada's energy prospects in relation to the changing situation in world oil prices and supplies. Federal initiatives were undertaken to provide an inventory of non-renewable resources with a view to developing a secure supply of hydrocarbons in keeping with the goal of self-reliance. This "need-to-know" was also recognized in the Joint Policy Statement (EMR & INAC) of 1976. The federal initiatives then included both tax incentives and the creation of Petro-Canada to increase the pace of exploration; however, these initiatives were largely offset by continued uncertainty affecting industry plans.

The National Energy Program, introduced in late 1980, seeks energy security by 1990 and an opportunity for greater participation by Canadians in the petroleum industry. The *Canada Oil and Gas Act* proclaimed on March 5, 1982, provides a regulatory basis for the management of Canada Lands and establishes the certainty of tenure necessary for industry planning. Amendments to the *Production and Conservation Act* (under the new Act) strengthen existing provisions for the supervision and control of oil and gas activities in the interests of safety and the prevention of pollution.

As with other non-renewable resources, many of the oil and gas reserves now known to exist in northern Canada will require large expenditures on transportation systems and northern infrastructures prior to commercial development. Several transportation system proposals are being studied to provide for a means of transporting and storing oil and gas for southern markets, taking into account the concerns of the native people and the protection of the environment.

Current oil and gas production is limited and exploration rather than production dominates in Yukon and the NWT. Indications are that substantial reserves of both oil and natural gas are present in the North and that northern Canada could become a major supplier of Canada's energy needs in the future.

8.2.1.1. Current production, processing and refining

The Norman Wells Oilfield is one of the largest in Canada, with over 100,000,000 m^3 of oil in place. It is the only producing oil field north of 60°N, producing about 173,400 m^3 of oil and 46,600,000 m^3 of gas a year. The only refinery north of 60°N is also located at Norman Wells and is operated by Imperial Oil Ltd. In 1981, the total refining output of all products was 99,800 m^3.

The use of modern development techniques by Esso and the installation of additional productive capacity will increase the recovery factor for these reserves from 17 per cent to over 40 per cent. The reserves are an estimate of the total oil entrapped within the limestone and only a fractional portion of these reserves can be recovered through primary, secondary and tertiary production methods; recovery depends in part on the nature of the trapping rocks, the depths and the fluids associated with the petroleum. Production is expected to increase from 425 m^3 to 4250 m^3 of natural oil and gas liquids a day for the first five years of the project, after which the rate of production will gradually decline.

In July, 1981 government approval was given to Interprovincial Pipelines (NW) Ltd. for construction of an oil pipeline from the Norman Wells oilfield to Zama, Alberta, to interconnect with the pipeline from there to Edmonton.

However, a delay in constructing facilities for extensive production improvement as well as a delay in pipeline construction was agreed to by the Minister of Indian and Northern Affairs in response to local concerns. Field construction on the oilfield expansion began in 1983 and on the pipeline in 1984. Completion of the $1.3 billion project is scheduled in 1985.

The Pointed Mountain field, located in the southwest sector of the NWT is the only commercially producing gas field in northern Canada. In 1981, the field's total production was approximately 350,910,000 m^3.

8.2.1.2 Acts and regulations

Oil and gas activities are administered through the *Canada Oil and Gas Act and Regulations*, the *Oil and Gas Production and Conservation Act* and the *Canada Oil and Gas Drilling Regulations*.

Oil and gas rights in the North were formerly administered under the *Canada Oil and Gas Land Regulations* (pursuant to the *Territorial Lands Act* and *Public Lands Grants Act*). The Regulations authorized the issuance of exploration permits and oil and gas leases by application on previously unexplored Canada Lands and the disposition of previously explored lands returned to the Crown (Crown Reserves) by public tender. All disposals by public tender were suspended from 1969 to July 1979, when Dome Petroleum acquired an Exploration Agreement on 770,000 hectares in the M'Clure Strait between Melville and Banks islands. All other dispositions were suspended from mid-1972 to mid-1977, when the Petro-Canada preferential rights were promulgated. Petro-Canada ultimately acquired some 37,500,000 hectares of new exploration rights in the eastern Arctic, the interior (Mackenzie) Plains and the Arctic Islands.

The 13 major holders of exploration rights in the North include Petro-Canada, Dome, Canterra, Panarctic, Esso (Imperial), Gulf, Shell and Mobil (roughly in order of net holdings). A characteristic of recent years is the concentration of exploration activities in the more promising areas, representing a consolidation of activities following earlier, more widespread exploratory work in the early 1970s. Consequently, an increased effort is being directed toward offshore exploration activity, especially in the Sverdrup Basin and the Beaufort Sea and, beginning in 1979, in the eastern Arctic.

Proposed Government regulations include the draft *Canada Oil and Gas Geophysical Regulations*, the draft *Canada Oil and Gas Pipeline Regulations*, the draft *Canada Oil and Gas Production Regulations* the draft *Structure Regulations* and the draft *Diving Regulations*. Each is responsible for specific management aspects. In addition, under the *Territorial Land Use Regulations*, all drilling operations and most exploration activities on land require a land use permit. Various conditions attached to these permits ensure sound land management and a minimum of disturbance to the environment.

The *Canada Oil and Gas Act* (Bill C-48) was introduced in December, 1980 and proclaimed on March 5, 1982. This legislation is one of the major elements of the National Energy Program announced in October, 1980. Under this Act the Canadian ownership of production will be increased through the requirement for a 50 per cent Canadian ownership at the production stage and the reservation of a 25 per cent interest to the Crown in all rights granted. This Crown share of production may be assigned to a Crown Corporation such as Petro-Canada or may be offered to Canadian companies via public tender. As a condition for granting a production licence, the Act requires a minimum of 50 per cent Canadian beneficial ownership of the licence, a basic royalty of 10 per cent and an additional royalty of up to 40 per cent of the net profits from production. In order to accelerate the exploration and development of frontier resources, the terms of replacement rights for existing oil and gas rights have been shortened and more stringent work requirements demanded. The Act also puts into place an oil and gas rights management scheme based upon exploration agreements covering large exploration concession areas and production licences covering individual fields.

With the passage of the *Canada Oil and Gas Act*, a need for more effective utilization of scarce human resources and coordination between the National Energy Policy and northern national objectives was recognized by the two ministers responsible for oil and gas management of Canada Lands in the North. Accordingly, the oil and gas management groups of Energy, Mines and Resources Canada (EMR) and Indian and Northern Affairs Canada (INAC) were merged into a single Canada Oil and Gas Lands Administration (COGLA). The administrator of COGLA reports to the two ministers through the respective deputy ministers and receives from them policy direction respecting northern oil and gas policy. A policy review committee consisting, among others, of the assistant deputy minister, Energy, and the assistant deputy minister, Northern Affairs and the administrator, provides policy direction to COGLA to ensure that uniformity and balance are achieved.

8.2.2 Oil and gas discoveries and reserves

Hydrocarbon accumulations are found in porous, sedimentary rocks where appropriate trapping mechanisms occur. Nearly one-third of the area of the NWT and Yukon is underlain by sedimentary rocks and theoretically capable, therefore, of containing hydrocarbons (Table 8-5). These rocks can be divided into thirteen hydrocarbon potential provinces (Figure 8-3). Although over 950 wells have been drilled in northern Canada, an overall appreciation of the hydrocarbon potential is possible only in general terms. Further drilling is required in certain areas before definitive statements can be made.

Bearing this in mind, the geological provinces with the greatest potential are thought to be the Sverdrup Basin and the Mackenzie Delta-Beaufort Sea. Other areas regarded as possessing moderate potential, as yet unconfirmed, are the Banks Basin and the eastern Arctic (Baffin Bay-Davis Strait area). In addition, limited amounts of oil have been found in the Franklinian Geosyncline (oil at Bent Horn on southwest Cameron Island), on the Mackenzie Plain (oil at Norman Wells, NWT), and in the Liard Plateau and Range (gas at Pointed Mountain, NWT and at Kotaneelee, Yukon). Hydrocarbons in non-commercial amounts have been encountered in the Great Slave Plain, Eagle Plain, Peel Plain, Anderson River and Peel Plateau areas. No hydrocarbon discoveries have yet been made in the Old Crow Basin, the Whitehorse Plain, the Great Bear Plain, and the Arctic Stable Platform.

Until 1981, details of drilling activities were summarized in *Oil and Gas Activities*, published annually by the Northern Oil and Gas Policy and Operations Coordination Division of Indian and Northern Affairs Canada, Ottawa. Since 1982, the annual report on the administration of Canada Oil and Gas Lands, published by COGLA, has detailed the oil and gas activities in the North.

The Canadian Petroleum Association annually assesses the quantities of remaining established hydrocarbon reserves in Canada. Latest estimates indicate that liquid hydrocarbons from north of 60°N constitute approximately 3 per cent and natural gas between 20 per cent and 25 per cent of Canada's total marketable quantity. However, some idea of the potential contribution of northern Canada to Canada's total hydrocarbon reserves is shown in Table 8-6, compiled by EMR. These data estimate the likelihood of existence (i.e. probability) of oil and gas resources in the various regions of Canada. They show a high (90 per cent) probability that northern Canada has approximately one-quarter of Canada's oil reserves and one-third of Canada's gas reserves.

8.2.3 Current activities

8.2.3.1 Mackenzie Delta-Beaufort Sea (Figure 8-4)

Many of the Canadian subsidiaries of large multinational oil companies undertook intensive exploration programs in the Mackenzie Delta in the early 1970s. Oil was first discovered in the Tuktoyaktuk Peninsula in 1969 by Imperial Oil Ltd. In 1971, large gas deposits were discovered in the Taglu area of Richards Island by Imperial and in the Parsons Lake area by Gulf Canada Ltd. in 1972. In 1973, Shell Canada Ltd. made a number of oil and gas discoveries in the Niglingtak and Kugpik areas of the Delta. The cancellation of the Mackenzie Valley Pipeline Project following the Berger Commission in 1977 led to the virtual cessation of further land-based drilling until 1982. However, activity has increased since 1982 with further exploration of the Tuk Peninsula.

Recent activity has been concentrated in the waters of the Beaufort Sea. Esso has constructed a number of artificial islands from which drilling has taken place. Oil discoveries were made at Adgo in 1974, at Issungnak in 1980, West Atkinson in 1982 and Itiyok in 1983. In deeper waters, Dome Petroleum has undertaken an ambitious exploration program using drillships. Between 1976 and 1980, a number of important oil discoveries have been made at the Nektoralik, Koakoak, Kopanoar, Ukalerk and Tarsiut wells. In many instances, gas has also been found. "Average expectation" potential resources in the Mackenzie Delta-Beaufort Sea area are 1,347 million m^3 of oil and 1,865 billion m^3 of gas.

However, offshore exploration is hampered by severe physical conditions in the Beaufort Sea. The drilling season is short and pack ice conditions are extremely variable from year to year. Dome's Ice Class III experimental icebreakers, *Kigoriak and Robert Lemeur* are currently being used to increase the drilling season. There are also environmental concerns related to the consequences of a possible uncontrolled blow-out and the difficulties of controlling such an event if it occurred toward the end of the drilling season in September.

During the past several season, operators have been attempting to extend the drilling season utilizing caisson retained islands, Esso's CR I, Dome/Gulf Tarsiut Island, and Gulf's Mobile Arctic Caisson, submersible platforms (Dome's SSDC) and ice-restraint drilling barges (Gulf's CDU). All of these devices remain limited to a degree by the continuing requirement for same-season relief well capability. However, the technology is improving the ability to drill in the harsh environment.

8.2.3.2 High Arctic (Figure 8-5)

Gas was first discovered in 1968 at Drake Point on the Sabine Peninsula of eastern Melville Island. In 1970 and 1971, two further gas discoveries were made, on King Christian Island and at Kristoffer Bay on Ellef Ringnes Island respectively. In 1972, a second major gas field was discovered on the west side of the Sabine Peninsula in the Hecla area. The first oil to be discovered was in the Bent Horn area of southwest Cameron Island in 1974. Land-based drilling and seismic activity reached a peak in 1973, with 83 wells and over 51,000 km of seismic survey completed that year for the NWT and Yukon Territory.

Panarctic Oil Ltd., a consortium of companies in which the federal government, through Petro-Canada, has a controlling interest, is the principal operator and contractor in the Arctic Islands. Since 1975, the consortium's exploration activity has focused on the delineation of known onshore reserves by traditional drilling methods and the development of offshore ice platform drilling. The objectives of the latter are to delineate the extent of the offshore portions of the gas fields already discovered and to test further geologic structures which lie offshore. New technology has evolved with the use of either modified land drilling rigs or specifically designed rigs supported on artificially thickened ice.

By early 1983 exploration had resulted in the discovery of 13 gas fields, with "average expectation" potential resources of 2257 billion m^3 and four oil fields with resources of 686 million m^3.

In 1976, the first large geologic structure offshore was drilled at Jackson Bay, resulting in an important gas discovery; between 1978 and 1980 further important discoveries of gas were made at Whitefish, west of Lougheed Island. In early 1981, oil was discovered at three other wells to the east and west of Lougheed Island — Cisco, Skate and Maclean. Further drilling is being undertaken to evaluate these discoveries, which appear to be most significant.

8.2.3.3 Eastern Arctic

In the mid 1970s, the petroleum industry expressed interest in exploring for hydrocarbons in the offshore areas of the eastern Arctic, between Baffin Island and western Greenland. Several areas are of potential hydrocarbon significanc — the Thule Basin off Greenland, Lancaster Delta, Home Bay Delta, Cumberland Delta, Lancaster Sound and Jones Sound. Canterra, Esso, CMO (Consolidex-Magnorth-Oakwood) and Petro-Canada are the major operators with interests in these areas.

Immediate concern was expressed as to the impact drilling activity might have upon the marine environment. Before drilling was permitted, therefore, the federal government undertook a comprehensive scientific study of the marine environment under the Eastern Arctic Marine Environment Studies (EAMES) Program. The southernmost element of the program was completed in 1979. By late 1980, two wildcat wells had been drilled south of Cape Dyer, one of which was a gas discovery. The physical constraints of drilling in this region include very deep water, stormy conditions and floating icebergs. The most northerly element of the program began in 1980, after the Environmental Assessment and Review Panel (EARP) recommended a regional planning study for the Lancaster Sound area and rejected the application by Norlands et al to drill a test well in the Dundas structure.

8.3 Land Use and Environmental Concerns

The search for natural resources in northern Canada has raised environmental and social concerns. A cornerstone of federal government policy has been that northern development can only be sanctioned if all possible effort is made to minimize the impact of such activity upon the environment, both biological and physical, and upon the native peoples.

Various measures have been taken to promote this general objective. One of the most important steps taken by the federal government was the passing of the *Territorial Land Use Regulations* and the *Northern Inland Waters Act and Regulations* in the early 1970s. Other initiatives include: (a) the 1973 Cabinet decision that all federal programs, projects and activities must be assessed early in the planning process for potential adverse effects on the quality of the environment; (b) the preparation of Environmental Impact Statements by industry and their assessment by federal government agencies prior to the granting of land use permits; (c) the establishment of government enquiries into the social and economic effects of major development proposals; (d) the undertaking of baseline data collection studies involving both industry and government, such as the Beaufort Sea Studies and the Eastern Arctic Marine Environmental Studies (EAMES) Program and the Environment Canada-Indian and Northern Affairs Land Use Information Series mapping program, prior to resource exploration; and (e) the support of research into Arctic land use problems through the Arctic Land Use Research (ALUR) Program of DINA.

8.3.1 Mines and minerals

A number of specific land use and environmental issues are associated with mineral exploration and production. For example, with the rapid growth of placer mining in Yukon, the magnitude of environmental impact has grown significantly. Although most placer activities are small, an increasing number are large commercial operations. Since placer mining is subject to the *Yukon Placer Mining Act* (1906), which takes precedence over the *Territorial Lands Act*, the *Territorial Land Use Regulations* (1971) do not apply to land staked under it. In some instances, Land Use Regulations have been circumvented by staking claims under the *Placer Mining Act* to provide access trails. Environmental problems related to placer operations include the degradation of large areas, stream siltation and reduction of water quality, with its resulting downstream effects on fish and aquatic habitat.

The potential development of mineral deposits also raises a number of land use and related concerns. For example, in the NWT, conflict arose as a result of proposed development of the lead-zinc, gold and uranium deposits in the Bathurst-Coppermine areas and the desire by Parks Canada for a National Park in the Bathurst Inlet area. Mining activities in the Mackenzie Mountains have real potential for polluting rivers which eventually pass through Nahanni National Park. In the Baker Lake region, the impact of mineral exploration on renewable resources, especially caribou, resulted in a one-year suspension of exploration in 1977.

8.3.2 Oil and gas

In the late 1960s, land use concerns related to seismic activity, especially in the Mackenzie Valley. Destruction of vegetation and the uncontrolled use of tracked vehicles in summer led to the meltout of ice-rich permafrost terrain and long-term physical damage to the land. Subsequent improvements in industry operating procedures and the strict application of the *Territorial Land Use Regulations* (e.g. restriction of cross-tundra vehicle movement to winter) have mitigated potential long-term damage to the land. Current terrain disturbance problems are restricted to localities such as borrow pits, drilling waste fluid disposal sumps and emergency situations where the movement of heavy vehicles across the tundra in summer might be permitted.

Potential for the most serious environmental problems appears now to be related to the drilling operation itself (e.g. blow-outs) and the disposal of waste drilling fluids, which are sometimes toxic. For land-based drilling, the *Territorial Land Use Regulations* require that these fluids be buried in below-ground sumps which will freeze in place and be permanently contained within the permafrost. These procedures have met with only partial success and the regulatory agencies and industry are jointly seeking improved disposal methods and more efficient drilling procedures. With offshore drilling in both the Beaufort Sea and the eastern Arctic, concern relates to the difficulty of containing a sea-bottom blow-out, especially if it were to occur just prior to the shut-down of operations in the late autumn. The flow of hydrocarbons beneath the ice throughout the winter could cause irreversible damage to aquatic life and possibly destroy the sensitive marine ecosystem on which many native peoples depend for their livelihood. A number of oil spill and blow-out contingency measures have been prepared by both industry and government.

8.3.3 General Information on ESRF

The Environmental Studies Revolving Funds (ESRF) are sources of funding for environmental and social studies deemed necessary for the exploration and development of oil and gas on the Canada Lands. There are two funds; the ESRF (INAC) concerns questions related to onshore and offshore activities in Canada's North, and is administered for the Minister of Indian and Northern Affairs by the Northern Affairs Program. The ESRF (EMR) addresses offshore activities in southern Canada and is administered for the Minister of Energy, Mines and Resources by COGLA.

Both funds operate principally on the basis of priority subjects struck annually by the ministers. Study proposals are invited to address the needs. In 1983, the following priority subjects were identified: waves; icebergs; sea bottom ice scour; social issues north; social issues south; oil spill research and countermeasures; bottom sediment transport and effects monitoring. 24 studies worth $2 million are underway concerning these subjects and 19 of them touch northern areas.

The funds are replenished through levies on the oil and gas interest owners and administered through joint government-industry advisory boards. The Northern ESRF Advisory Board is chaired by INAC, with representation from the departments of Environment, Fisheries and Oceans and Energy, Mines and Resources, as well as the oil and gas industry, north and south.

Studies within ESRF must be regional or national in scope and must be directly related to oil and gas exploration or development decision-making. All interest owners and holders share in their cost and the ESRF serves as the mechanism to equitably distribute the costs.

Anyone or any organization interested in, and capable of doing the required studies may submit proposals to the funds. It is expected that individual experts or members of organizations such as consulting companies, universities, private interest groups, oil and gas companies or federal and provincial government agencies will participate. Calls for study proposals are published regularly in the ESRF news bulletin called "Update". Copies of "Update" as well as ESRF guidelines relating to study proposals and applications for payment are available by writing the ESRF managers. The address for the northern ESRF is:

ESRF (INAC) Manager,
Northern Affairs Program,
Indian and Northern Affairs Canada,
Ottawa, Ontario
K1A 0H4
(819) 997-7136

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Table 8-1

Mineral production chart, 1979-83. NWT and Yukon

Mineral	1979	1980	1981	1982	1983
NWT:					
Gold ($)	61 868 488	96 920 000	85 495 000	91 415 000	153 067 000
(g)	5 355 926	4 209 000	4 825 000	6 113 000	9 128 000
Silver ($)	34 770 651	41 331 000	13 465 000	16 073 000	22 993 000
(g)	83 358 000	53 000 000	33 000 000	51 000 000	51 000 000
Copper ($)	941 732	679 000	613 000	419 000	—
(kg)	397 191	262 000	277 000	215 000	—
Lead ($)	80 117 935	55 853 000	44 680 000	46 367 000	40 444 000
(kg)	60 645 969	51 337 000	45 522 000	63 955 000	68 491 000
Zinc ($)	205 600 051	172 556 000	159 764 000	229 110 000	257 069 000
(kg)	213 323 454	175 685 000	133 604 000	213 523 000	223 538 000
Sand & Gravel ($)				41 482 000	39 780 000
(tonnes)				6 625 000	6 000 000
Stone ($)				1 268 000	1 245 000
(tones)				323 000	300 000
Tungsten ($)	53 675 858	68 119 000	—	—	—
(kg)	3 254 067	4 007 000	2 515 000	2 925 000	1 491 000
Arsenic Trioxide & Tungsten Trioxide ($)	93 005 000	42 215 000	17 583 000		
(kg)					
TOTAL ($)	436 974 715	435 458 000	397 022 000	468 349 000	532 181 000
Yukon:					
Gold ($)	13 749 271	63 029 000	66 382 000	39 721 000	50 451 000
(g)	1 190 268	2 982 000	3 746 000	2 656 000	3 008 000
Silver ($)	54 218 064	114 120 000	32 339 000	29 943 000	8 155 000
(g)	129 982 000	147 000 000	80 000 000	95 000 000	18 000 000
Lead ($)	103 374 279	71 558 000	54 935 000	25 733 000	231 000
(kg)	78 250 062	65 771 000	55 970 000	35 493 000	391 000
Copper ($)	18 442 058	27 082 000	20 123 000	14 654 000	—
(kg)	7 778 231	10 433 000	9 094 000	7 510 000	—
Coal ($)	—	—	—	—	—
(tonnes)	23 003	16 529	20 860	—	—
Zinc ($)	109 460 866	88 313 000	94 237 000	58 519 000	—
(kg)	113 572 783	90 938 000	78 806 000	54 537 000	—
Stone ($)			550 000	525 000	
(tonnes) ($)			463 000	420 000	
TOTAL ($)	299 244 538	364 102 000	268 016 000	169 120 000	59 362 000

(P) Preliminary figures

Source: Mineral Policy Sector, Energy Mines and Resources, and Northern Resources and Economic Planning Branch, Indian and Northern Affairs.

Table 8-2

Mining districts of the NWT and Yukon, together with claims recorded in 1982 and 1983

Territory	District	Office	Claims recorded	
			1982	1983
Yukon	Mayo	Mayo	408	540
	Dawson	Dawson	538	977
	Watson Lake	Watson Lake	1852	1418
	Whitehorse	Whitehorse	981	1675
Northwest Territories	Mackenzie	Yellowknife	145	430
	Nahanni	Yellowknife	35	29
	Arctic and Hudson Bay	Yellowknife	106	88

Note: Does not include placer activity, mostly in Dawson area. In 1982, 3969 placer claims and 294 placer leases. In 1983, 2605 placer claims and 521 placer leases.

Table 8-3

Summary details of major mining operations, Yukon, 1983

Operation*	Location	Type	Product	Tonnes Milled	Reserves (tonnes)	Reserve Grade
Cyrus Anvil Mining Corporation (215)	Faro	open pit	zinc, lead, silver, gold	nil	24 500 000 2.9% lead, 35 g silver per tonne	4.4% zinc,
United Keno Hill Mines Limited (146)	Elsa	under-ground & open pit	silver, lead, zinc	29 596	200 000	840 g silver per tonne 3.9% lead

* Number in parentheses indicates employees

Table 8-4

Summary details of major mining operations, NWT, 1983

Operation*	Location	Type	Product	Tonnes Milled	Reserves (tonnes)	Reserve Grade
Canada Tungsten Mining Corp (147)	Tungsten	underground	tungsten	36 001	2 720 000	1.3% WO_3 (tungsten trioxide)
Cominco Ltd. — Con (307)	Yellowknife	underground	gold, silver	191 851 per tonne	1 700 000 gold	15.1 g
Cominco Ltd. — Pine Point (535)	Pine Point	open pit	zinc, lead	893 329	23 600 000	6.3% zinc, 2.7% lead
Cominco Ltd. — Polaris (220)	100 km northwest of Resolute	underground	zinc, lead	748 777	16 900 000 4.1% lead	14.8% zinc
Cullaton Lake Gold Mines Ltd. (148)	Cullaton Lake	underground	gold, silver	98 553	154 000 per tonne	17.1g gold
Echo Bay Mines Ltd. (340)	Contwoyto Lake	underground	gold, silver	331 218	3 084 000 per tonne	13.6g gold
Giant Yellowknife Mines Ltd. — Giant (292)	Yellowknife	underground and open pit	gold, silver	296 650	1 016 000	7.89 g gold per tonne
Giant Yellowknife Mines Ltd. — Salmita (84)	250 km northeast of Yellowknife	underground	gold, silver	11 926	105 233	28.11g gold per tonne
Nanisivik Mines Ltd. (190)	Nanisivik	underground	zinc, lead, silver	615 561	4 400 000	10.5% zinc 0.8% lead
Terra Mines Ltd. (116)	Camsell River	underground	silver, lead, zinc, copper	45 287	n/a	n/a

* Number in parentheses indicates employees

n/a Not applicable

Table 8-5

Total area and volume of sedimentary rocks in Yukon, NWT and the western provinces of Canada

Region	Total Area (km^2)	Volume of Sediments (km^3)
Yukon and Northwest Territories Mainland*	1,402,000	1,755,000
Arctic Archipelago	1,670,000	5,314,000
Manitoba and Saskatchewan	570,000	688,000
Alberta	582,000	1,390,000
British Columbia	359,000	1,242,000
	4,583,000	10,389,000

* Includes Beaufort Sea

** Includes Arctic Stable Platform but not Beaufort Sea

Table 8-6

Conventional Oil and Gas Resources of Canada (1983)

	Reserves and Discovered Resources	Potential		
		High Confidence	Average Expectation	Speculative Estimates
Oil 10^6 m^3 (Recoverable)				
Western Canada Sedimentary Basin	754	234	593	1210
Cordilleran Basins	—	—	50	110
Beaufort Sea-MacKenzie Delta	117	307	1347	2962
Arctic Islands	76	316	686	1305
Eastern Canada Offshore	225	512	1877	3392
Paleozoic Basins — Eastern Canada	0.8	20	167	605
TOTAL	1173	*1486	4720	*8995
Gas 10^9 m^3 (Recoverable)				
Western Canada Sedimentary Basin	2111	1544	2504	4930
Cordilleran Basins	—	40	270	760
Beaufort Sea-MacKenzie Delta	286	871	1865	4103
Arctic Islands	361	1100	2257	3662
Eastern Canada Offshore	246	725	2423	4713
Paleozoic Basins — Eastern Canada	8.8	46	190	660
TOTAL	3013	*4342	9509	*18285

* These number do not add arithmetically but must be summed using statistical techniques.

Source: EMR (Geological Survey of Canada), *Oil and Natural Gas Resources of Canada*, 1984.

Figure 8-1:
Mineral Exploration and Mining

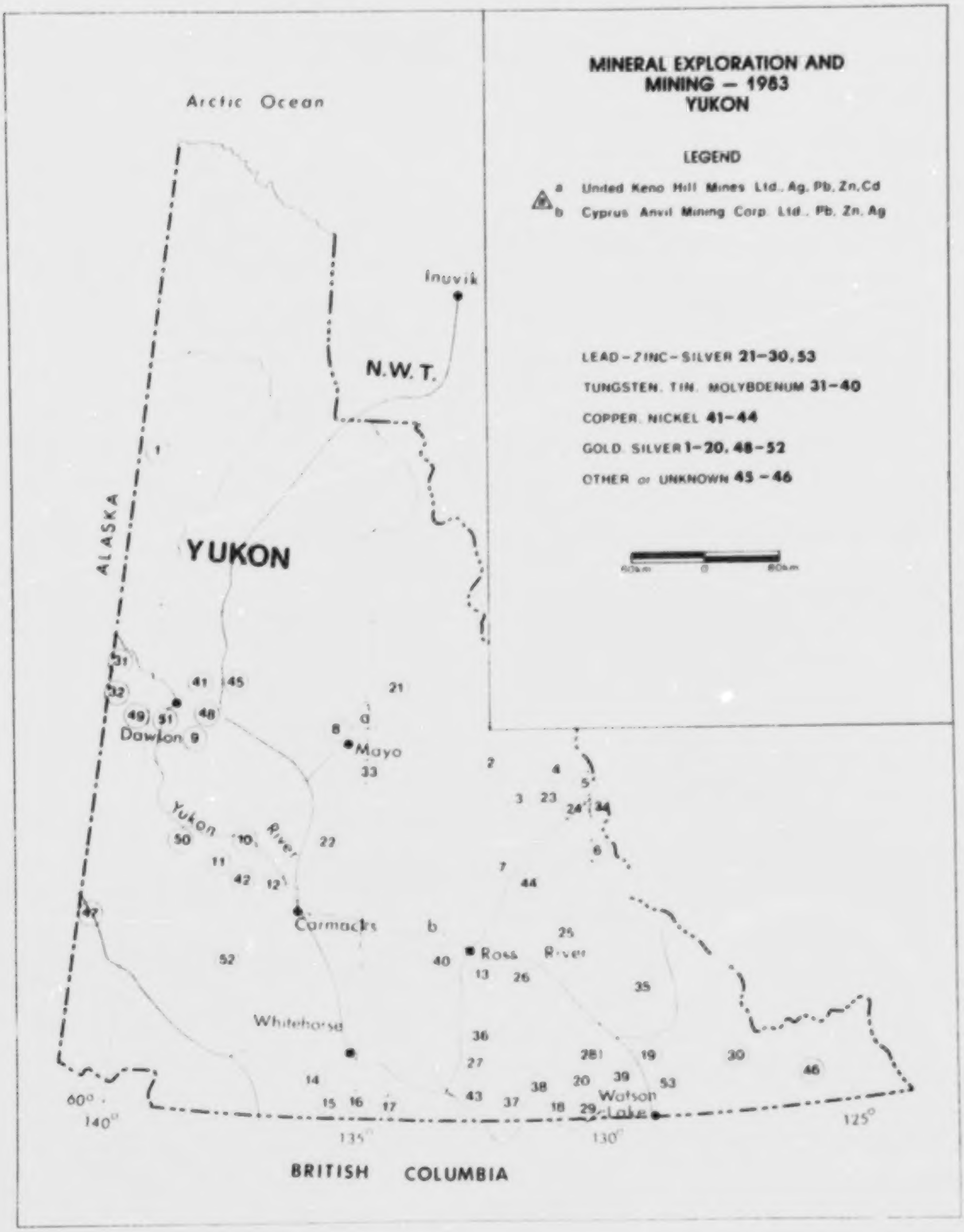
MINERAL EXPLORATION AND
MINING — 1983
YUKON
LEGEND
a United Keno Hill Mines Ltd., Ag, Pb, Zn, Cd
b Cyprus Anvil Mining Corp. Ltd., Pb, Zn, Ag
LEAD-ZINC-SILVER 21-30, 53
TUNGSTEN, TIN, MOLYBDENUM 31-40
COPPER, NICKEL 41-44
GOLD, SILVER 1-20, 48-52
OTHER or UNKNOWN 45-46
80km
0
80km
Arctic Ocean
Inuvik
N.W.T.
ALASKA
YUKON
Dawson
Mayo
Yukon River
Carmacks
Ross River
Whitehorse
Watson Lake
60°
140°
135°
130°
125°
BRITISH COLUMBIA
a
b
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
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Figure 8-2:
Mineral Exploration and Mining in the Northwest Territories

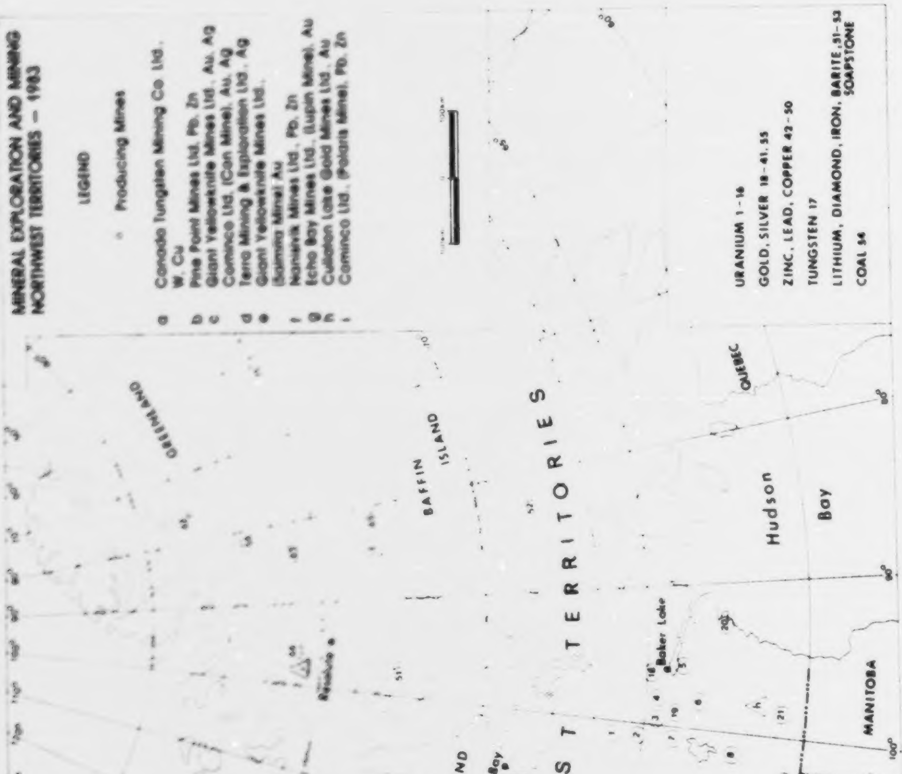

MINERAL EXPLORATION AND MINING
NORTHWEST TERRITORIES — 1983
LEGEND
Producing Mines
a Canada Tungsten Mining Co. Ltd., W, Cu
b Pine Point Mines Ltd, Pb, Zn
c Giant Yellowknife Mines Ltd., Au, Ag
Cominco Ltd. (Con Mine), Au, Ag
d Terra Mining & Exploration Ltd., Ag
e Giant Yellowknife Mines Ltd., (Salmita Mine) Au
f Nanisivik Mines Ltd., Pb, Zn
g Echo Bay Mines Ltd., (Lupin Mine), Au
h Cullaton Lake Gold Mines Ltd., Au
i Cominco Ltd., (Polaris Mine), Pb, Zn
URANIUM 1-16
GOLD, SILVER 18-41, 55
ZINC, LEAD, COPPER 42-50
TUNGSTEN 17
LITHIUM, DIAMOND, IRON, BARITE, 51-53
SOAPSTONE
COAL 54
NORTHWEST TERRITORIES
YUKON
ALASKA
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
QUEBEC
GREENLAND
Arctic Ocean
BANKS ISLAND
VICTORIA ISLAND
BAFFIN ISLAND
Hudson Bay
Cambridge Bay
Coppermine
Resolute
Baker Lake
Norman Wells
Mackenzie River
Fort Simpson
Yellowknife
Pine Point
Fort Smith
Inuvik
Arctic
Circle
60°
65°
70°
80°
90°
100°
110°
120°
130°
140°

Figure 8-3:
Location of Hydrocarbon Potential Geological Provinces

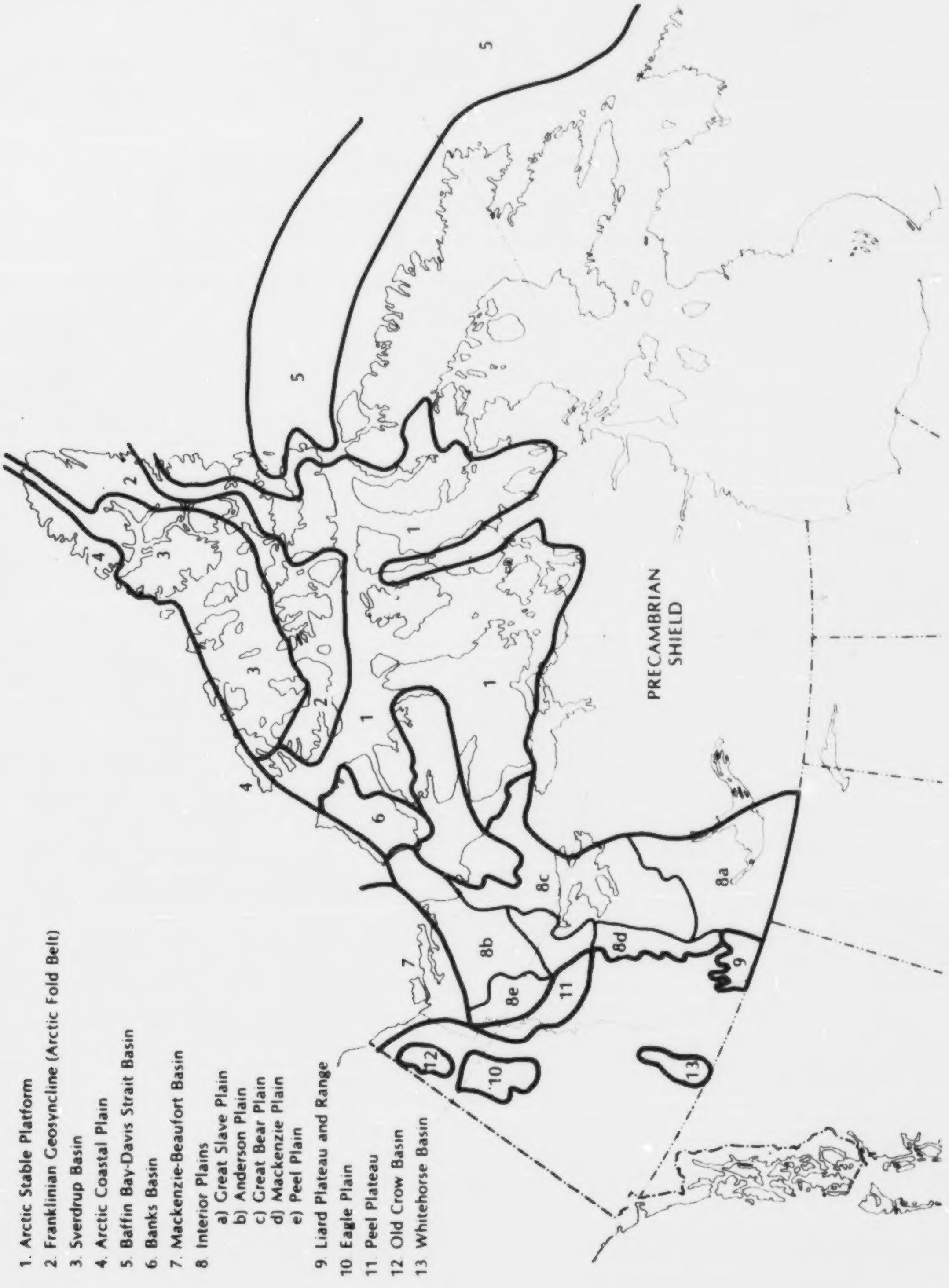

1. Arctic Stable Platform
2. Franklinian Geosyncline (Arctic Fold Belt)
3. Sverdrup Basin
4. Arctic Coastal Plain
5. Baffin Bay-Davis Strait Basin
6. Banks Basin
7. Mackenzie-Beaufort Basin
8. Interior Plains
a) Great Slave Plain
b) Anderson Plain
c) Great Bear Plain
d) Mackenzie Plain
e) Peel Plain
9. Liard Plateau and Range
10. Eagle Plain
11. Peel Plateau
12. Old Crow Basin
13. Whitehorse Basin
5
5
2
4
3
3
2
1
1
1
PRECAMBRIAN SHIELD
4
6
8c
8a
7
8b
8d
9
8e
11
12
10
13

Figure 8-4:
Current Exploration in the Mackenzie-Beaufort Sea

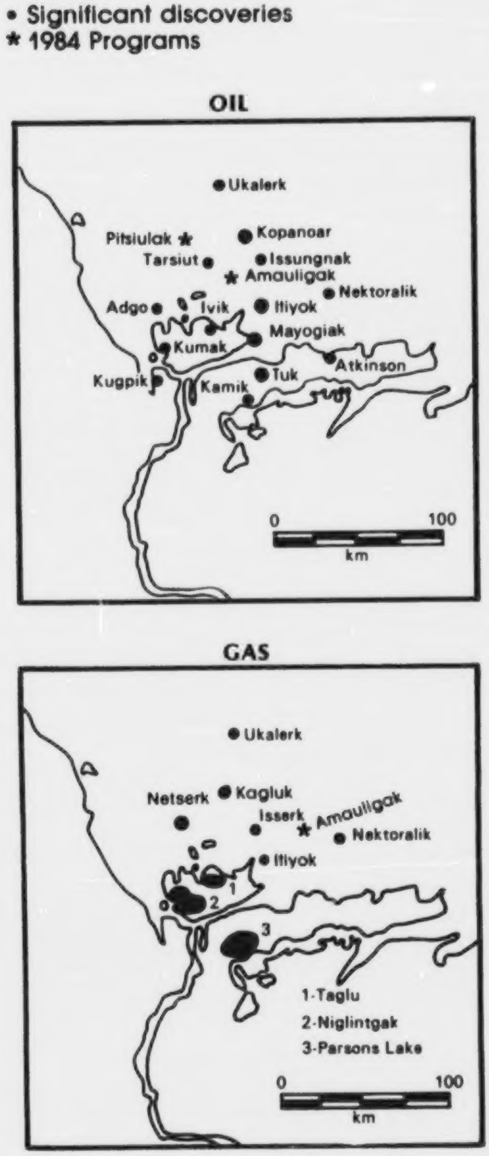
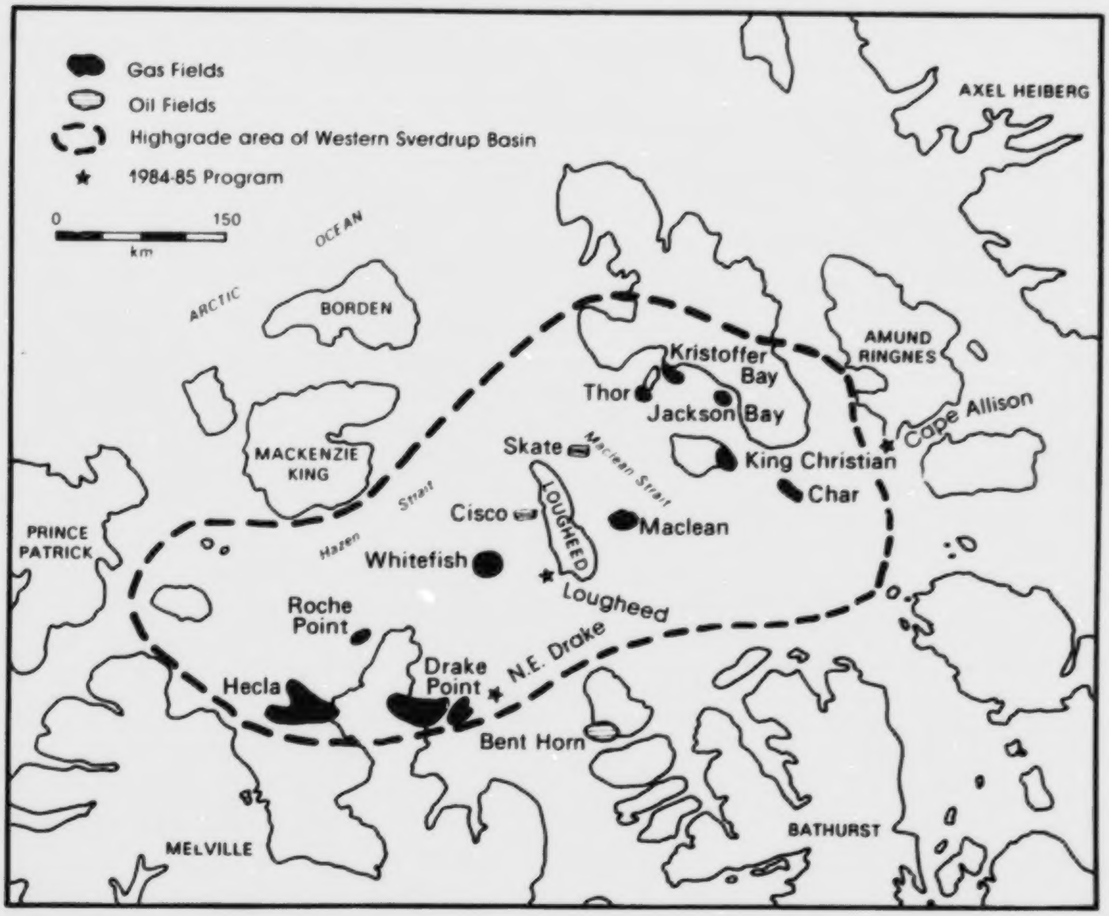

• Significant discoveries
* 1984 Programs
OIL
Ukalerk
Pitsiulak
Kopanoar
Tarsiut
Issungnak
Amauligak
Nektoralik
Adgo
Ivik
Itiyok
Mayogiak
Kumak
Atkinson
Tuk
Kugpik
Kamik
0
100
km
GAS
Ukalerk
Netserk
Kagluk
Isserk
Amauligak
Nektoralik
Itiyok
1
2
3
1-Taglu
2-Niglintgak
3-Parsons Lake
0
100
km

Figure 8-5:
Current Exploration in the Arctic Islands


Gas Fields
Oil Fields
Highgrade area of Western Sverdrup Basin
1984-85 Program
0
150
km
AXEL HEIBERG
OCEAN
ARCTIC
BORDEN
AMUND RINGNES
Kristoffer Bay
Thor
Jackson Bay
Cape Allison
MACKENZIE KING
Skate
Maclean Strait
King Christian
Char
Strait
Cisco
LOUGHEED
Maclean
PRINCE PATRICK
Hazen
Whitefish
Lougheed
Roche Point
N.E. Drake
Hecla
Drake Point
Bent Horn
MELVILLE
BATHURST

9.0 Northern Hydracarbon Transportation Proposals

9.1 General

The problems of bringing gas and oil from the Arctic to markets in southern Canada and the United States have brought forth a variety of suggested solutions. Pipelines are practicable under northern conditions where the route is overland or requires short marine sections, but they present great, possibly insoluble, problems when large stretches of ocean must be crossed. The most likely alternative to pipelines in marine areas is the use of icebreaking tankers carrying liquefied natural gas (LNG) or oil.

Where an overland route is available the lowest-cost solution is probably a pipeline, although the total cost will still be immense, as the estimates for various proposals outlined below will indicate.

As of the beginning of 1982, two pipelines, the Pointed Mountain gas pipeline and the products line from Skagway to Whitehorse, are in place in the North and one is currently under actual construction, the Norman Wells oil pipeline. Others are still at various stages of planning, design, regulatory review or financing processes. These are shown on the accompanying map (Figure 9-1), and descriptions follow for those proposals presently approved or the subject of applications for approval to government.

9.2 Alaska Highway Gas Pipeline (AHGP)

9.2.1 Total Route in Canada

Proposal:	To transport natural gas from Prudhoe Bay, Alaska, to the lower 48 states and allow for further access to Canadian gas in the Mackenzie Delta through an interconnecting Dempster Lateral pipeline. The Alaska Highway pipeline system includes 7696 km (3268 km in Canada, of which 832 km are in Yukon) of 123 cm and 143 cm diameter pipe.
Proponent:	Foothills Pipe Lines (Yukon) Ltd. for Canadian portion.
Sponsors:	Nova (formerly Alberta Gas Trunk Line) and Westcoast Transmission Company Ltd. Subsidiaries: Five companies — one for each segment in Canada.
Date Application Filed:	August 1976
Source/Markets:	Prudhoe Bay, Alaska, gas for American markets; provision for Mackenzie Delta gas to Canadian and US markets (pre-build and Dempster Lateral).
System Capacity:	
US gas:	680 million m^3/day
Canadian gas:	340 million m^3/day
Total:	1020 billion m^3/day
Estimated Cost of Canadian Portion:	$8.4 billion US (1980 dollars)
Projected Completion:	Phase 1 of the pipeline, from Alberta to US markets, was completed in September 1982 to export Canadian gas. No schedule has been set for completion of the pipeline due to uncertainties in market conditions, financing considerations and related economic factors.

9.2.2 Yukon Segment

Facilities:	Pipeline
Length/Diameter:	428 km of 123 cm diameter, 404 km of 143 cm diameter
Throughput:	680 million m^3/day
Compressor Stations:	
Number:	five initially; four additional if Dempster Lateral constructed
Locations:	equally spaced along line
Administration:	
Workcamps:	three for pipeline plus compressor stations
Operating and maintenance offices:	Whitehorse, plus four communities
Manpower Requirements:	
Construction:	peak of approximately 3500 people
Operation:	300-400 (half located in Whitehorse)
Public Review:	Alaska Highway Pipeline Inquiry (Lysyk, Bohmer, Phelps) Panel reported July 1977; Environmental Assessment Review Panel (EARP) (Hill) Panel hearings in 1977; Environmental Impact Statement (EIS) filed in 1979; EARP (Hurtubise) Panel hearings in 1979; Northern Pipeline Agency (NPA) hearings on draft environmental and socio-economic terms and conditions in 1979; EARP (Cotterill) Panel hearings in 1981; EARP (Robinson) Panel hearings in 1982.

9.2.3 Dempster Lateral

Proposal:	To construct a buried gas pipeline from Richards Island along the Dempster and Klondike highways to connect with the Alaska Highway main pipeline near Whitehorse, 1189 km of 87 cm diameter pipe.
Proponent:	Foothills Pipe Lines (Yukon) Ltd.
Sponsors:	Nova (formerly Alberta Gas Trunk Line Company Ltd.) and Westcoast Transmission Company Ltd.
Date Application Filed:	June 29, 1979
Markets:	Initially for US export; then southern Canada.
Estimated Cost:	$1.28 billion (1978 dollars)
Projected Start-up:	
Construction:	on completion of Alaska Highway Gas Pipeline
Manpower Requirements (jobs/year):	
Construction:	220-3260
Operation:	105
System Capacity:	
Initial:	225 million m^3/day
Operational:	350 million m^3/day
Ultimate:	425 million m^3/day
Estimated Reserves:	
Available:	1.5 billion m^3 (Mackenzie Delta)
Required:	310 billion m^3

Compressor Stations:	
Number:	Eight
Locations:	121-153 km apart
Public Review:	Referred to Federal Environment Assessment and Review Office (FEARO) January 1978; review panel formed; environmental statement filed June 29, 1979. Socio-economic statement filed August 1979 Planning of public hearings will depend on project scheduling.
Communities affected:	Inuvik, Arctic Red River, Fort McPherson, Dawson City, Stewart Crossing, Pelly Crossing, Carmacks, Whitehorse

9.3 Norman Wells Oilfield Expansion and Pipeline Project

9.3.1 Total Project

Proposal:	Combined oilfield expansion of the existing development at Norman Wells, NWT, from the present level of 475 m^3/day to 4800 m^3/day of oil, and construction of a 324 mm, 870 km buried pipeline from Norman Wells south along the east side of the Mackenzie River to connect with the Rainbow pipeline at Zama, Alberta.
Proponents:	Esso Resources Canada Ltd. (field); Interprovincial Pipe Line (NW) Ltd. (pipeline).
Application Filed:	
Field expansion:	February 29, 1980
Pipeline:	March 13, 1980
Decision announced:	July 30, 1981
Markets:	southern Canada
System Capacity:	
Initial:	4320 m^3/day of oil
Operational:	5120 m^3 day of oil and 800 m^3/day of natural gas liquids (field)
Potential:	7200m^3/day of oil (pipeline)
Recoverable Reserves:	
Current:	16 million m^3 of oil
Projected:	40 million m^3 of oil
Life of Project:	
Current:	23 years
Projected:	35 years
Number of Wells:	
Current:	55
Projected:	Total: around 220 wells. 60% are new water-injected wells 40% are new production wel
Estimated Cost:	
Field development:	$612 million
Pipeline:	$450 million
Total	$1,062 million
Projected Mobilization in NWT:	January 1983
Initial Throughput:	1985
Public Review:	Hearings held in northern communities August-September 1980; EARP Panel report released January 22, 1981. NEB hearings (pipeline only) held in Edmonton and Yellowknife, October 1980; the NEB report released April 22, 1981.

9.3.2 Pipeline

Facilities:	
Pipeline:	buried to 0.9 m
Length:	869 km (753 km NWT)
Diameter:	324 mm outside, 310 mm inside
Right of way:	20 m
Throughput:	5120 m^3/day
Operating Cost:	$14.3 million annually over first five years
Projected Schedules:	
Mobilization:	1983
Pipeline:	1983-84 and 1984-85
Start-up:	1985
Project abandonment:	25 to 40 years later
Construction Spreads:	
Number:	six, carrying 450 workers each at peak construction
Manpower Requirements:	
Construction:	low — 39 in 1982; peak — 1350 in March 1983 (peak of that construction season)
Operation:	29 permanent positions

9.3.3 Oilfield Expansion

Facilities:	164 new wells (presently 55); six artificial islands in the Mackenzie River. Gathering (45 km under-riverbed pipe) and processing systems.
Production:	4320 m^3/day of crude oil by waterflood recovery plus 480 m^3/day for local refinery
Projected Schedule:	
Drilling program:	1983, 1984 to third quarter 1985
Island construction:	1983 and 1984
Facilities:	late 1982 to late 1985
Pipe laying	
Mackenzie River:	1983-1984
Project start-up:	mid 1985
Project economic life:	24-40 years
Manpower Requirements:	
Construction:	low — 350 in January 1983; peak — 1000 in September 1983
Operation:	200 permanent year-round positions 30 resident/150 rotational positions

9.4 Arctic Pilot Project

Proposal:	To transport natural gas from Melville Island to eastern Canadian seabord by pipeline and liquefied natural gas (LNG) tanker.
Sponsors:	Petro-Canada (Project Manager); Nova; Melville Shipping Ltd.; Dome Petroleum Ltd.
Application Filed:	January 1979 and withdrawn July 1980. New application filed October 15, 1980 with INAC, NEB, Transport Canada (DOT).
System Capacity:	7.7 million m^3/day
Tankers:	Two Arctic Class seven LNG Icebreaking; 14 round trips each per year
Estimated Reserves:	
Required:	51 billion m^3/day of natural gas
Available:	150 billion m^3/day of natural gas at the Drake Point Field
Estimated Cost:	$1.5 billion (1980 dollars) (excluding field development and southern terminal)
Projected Completion:	Not known pending identification of markets
Manpower Requirements: (jobs/year estimated on site)	
Construction:	100-500 for pipeline 250 for dock facilities
Operation:	40-45
Other Factors:	Pilot Project — year-round operation; Danish/Greenland interests and concerns
Technical Considerations:	LNG safety — plant, storage, tankers; membrane integrity — storage tanks; icebreaking tankers

Environmental and Socio-economic Aspects:

Statement filed:	January 1979, withdrawn July 1980 and new statement filed October 15, 1980
Referred to EARP:	November 1977
EARP Review:	community hearings, April 15-21, 1980; more formal hearings in Resolute, April 23-29, 1980. EARP Panel report released October 1980.
Application filed with DOT:	*TERMPOL Code Assessment consideration: Effects of icebreaking and tanker traffic on marine wildlife and resource harvesting.
Communities affected:	Resolute Bay, Arctic Bay, Pond Inlet, Grise Fiord
NEB hearings:	referred by INAC for review under Part II of NEB Act. Hearings commenced February 2, 1982. Adjourned pending resolution of markets.

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* Code of recommended standards for the prevention of pollution in marine terminal systems

9.5 Polar Gas Pipeline

Proposal:	To construct a pipeline to transport natural gas from the Mackenzie Delta area to southern markets.
Proponent:	Polar Gas
Sponsors:	TransCanada PipeLines (project manager); Panarctic Oils Ltd.; Petro-Canada; Ontario Energy Corporation; Tenneco Oil of Canada Ltd.
Applications:	Filed with NEB and INAC on June 29, 1984.
Markets:	US and/or Canada — to be determined
System Capacity:	
Initial:	61 million m^3/day
Ultimate:	93 million m^3/day
Estimated Cost:	$3.3 billion (1984 dollars)
Communities Affected:	Inuvik, Tuktoyaktuk, Aklavik, Fort McPherson, Arctic Red River, Fort Good Hope, Fort Norman, Norman Wells, Fort Franklin, Wrigley, Fort Simpson, Jean Marie River, Fort Providence, Hay River, Trout Lake, Yellowknife
Public Review:	Public review processes are under consideration.

9.6 Bent Horn Production Project

Proposal:	To produce and transport a limited quantity of crude oil from the Bent Horn A-02 well on Cameron Island in the High Arctic by tanker once a year.
Proponent:	Panarctic Oils Ltd.
Application:	Development Plan filed with Canada Oil and Gas Lands Administration.
Estimated Production:	1985 — Phase I, 16,800 m^3 (three years) 1988 — Phase II, 67,280 m^3 (seven years)
Anticipated Market:	Eastern Canada.
Facilities:	114 mm flowline, tank farm, shiploading facilities.
Tankers:	Phase I — single reinforced vessel Phase II — four vessels.
Estimated Cost:	Phase I — $5.98 million (construction) — $0.5 million (operating costs/yr.) Phase II — $9.4 million (construction) — $1.5 million (operating costs/yr.)
Communities Affected:	Resolute Bay, Arctic Bay, Pond Inlet, Grise Fiord.
Environmental and Socio-Economic Aspects:	Initial Environmental Evaluation submitted to INAC July 20, 1984; socio-economic statement submitted May 1984.

I. Figure 9-1:
Oil and Gas Transportation

Natural Gas

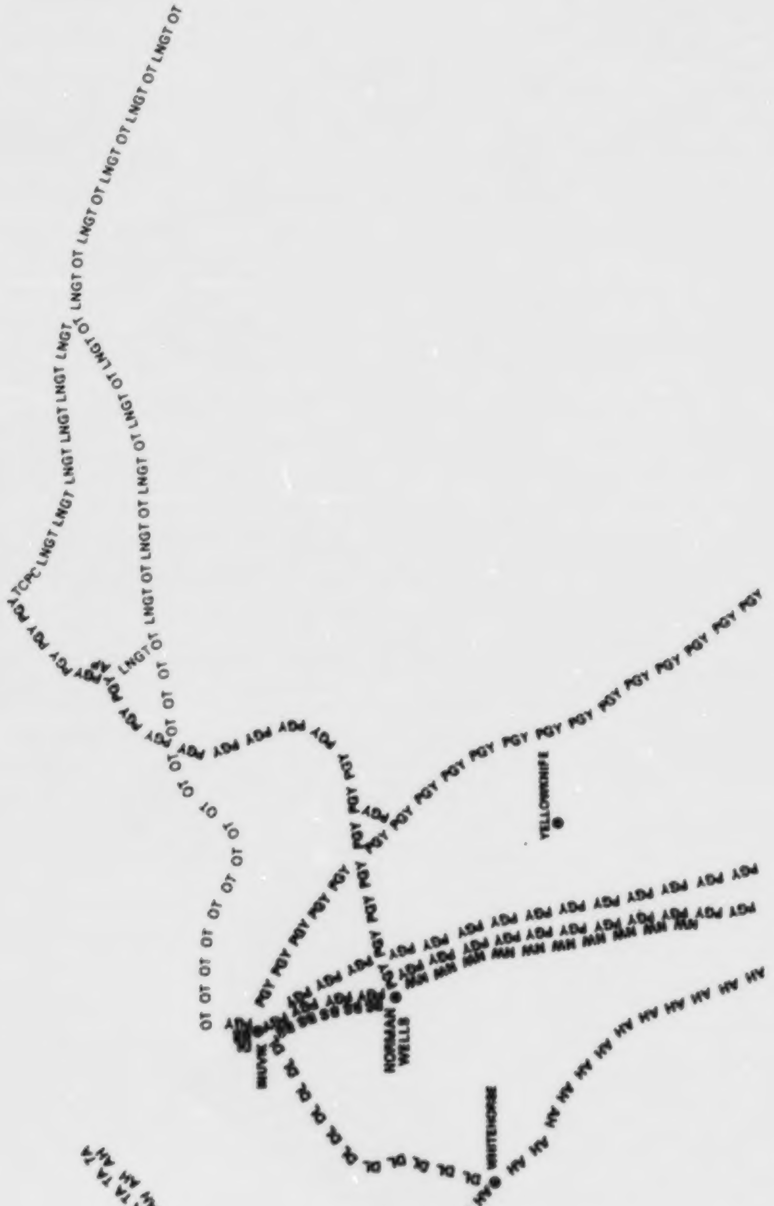
AH	Alaska Highway
DL	Dempster Lateral
PGY	Polar Gas "Y" Lines
AP	Arctic Project
TCPC	Trans Canada Petro Canada

Oil

TA	Trans Alaska
NW	Norman Wells
BS	Beaufort Sea

Tanker Routes

OT	Oil Tanker
LNGT	Liquified Natural Gas Tanker


INUVIK
NORMAN WELLS
WHITEHORSE
YELLOWKNIFE

10.0 Transportation

10.1 General

Throughout the Northwest Territories and Yukon, much of the transportation is by air. However, in Yukon and the Mackenzie District of the NWT there is an important and growing network of roads, water routes which carry a substantial tonnage of freight and railways which reach as far as Whitehorse, Yukon, and Pine Point, NWT.

Until the 1940s there were few northern roads except for short trails in settlements and a wagon track from Whitehorse to Dawson. This and a single rail line constituted the land links with "outside". The construction of the Alaska Highway, spurred by the defence needs of North America during World War II, provided a means of reaching the mineral wealth of northern BC and Yukon, but even ten years after the war's end there was no established roads policy.

The end of the 1940s saw the first road connection to the NWT with the start of the Mackenzie Highway. Running 752 km north from Grand Prairie, Alberta, it carried freight to Hay River on Great Slave Lake, the southern end of the Mackenzie River transportation system.

During the 1950s a definite roads policy began to emerge with the approval of an annual expenditure of $10 million for new road construction in Yukon and the NWT. Actual expenditures during the first eight years of the program averaged about $6 million, but by 1980-81 the planned expenditure by Indian and Northern Affairs Canada (INAC), Public Works Canada (DPW) and the territorial departments of highways for roads, bridges and public utility services had risen to $33 million. In addition to this, Transport Canada planned for roughly equal amounts to be spent on both air and marine transportation.

The new Dempster Highway traverses 726 km north from the Klondike Highway near Dawson City, Yukon to Inuvik, NWT. The completion of this highway in 1978 provided an all-weather road link between southern Canada and the Mackenzie Delta.

10.2 Air Transportation

10.2.1 General

Because of the vast distances which must be covered, transportation by air is the choice for most travellers in Canada's North even if alternatives are available. The shortness of the ice-free season even in those parts of the Arctic Ocean where open water is experienced, makes air transportation essential. To meet this need, commercial air carriers offer scheduled service to most communities and charter service virtually anywhere.

Figure 10-1 shows the routes covered by scheduled flights. Many other operators also operate to a regular schedule, although they are not required to do so under the terms of their licences. Figure 10-2 shows the points to which these unscheduled flights are made on a unit toll basis.

For a complete list of carriers, the points served, class of licence held and the aircraft operated (classified by weight group) see The Directory of Canadian Commercial Air Service. Copies of this directory are available from:

Canadian Government Publishing Centre
Supply and Services Canada
Hull, Quebec, Canada K1A 0S9

10.2.2 Equipment

The equipment used by the carriers listed in Table 10-1 varies in accordance with the availability of aircraft and seasonal demand. Types listed here should be considered as a general guide.

10.2.3 Fares and Charter Rates

Air carriers charge on a toll per unit of traffic (i.e. price per seat) for passenger service.

Charter

In contrast to unit toll, in which charges are per seat or per kilogram, charter rates are for the entire aircraft. They are determined by the competitive market and, generally speaking, reflect local costs. A licensee may file different rates for the same aircraft type for different locations or he may elect to offer a uniform rate wherever he provides service. The rates quoted in Table 10-4 are those filed by one of the larger air carriers operating in the North and should be considered as typical only.

10.3 Roads and Road Transportation

10.3.1 General

Northern roads are characterized by long distances and low traffic volumes. Most all-weather roads are gravel surfaced and are left untreated at traffic levels of less than 250 vehicles per day. Above this level calcium chloride or other dust control treatment is required. When the mean daily traffic count, May to October inclusive, reaches 500 vehicles, paving is considered to be justified. Portions of the Alaska Highway, the Klondike Highway, the Carcross Skagway Road, the Hay River Highway and the Fort Smith Highway now have a bituminous surface treatment or are paved, and more than 1250 km of Yukon highways now have paved or bituminous surface.

Because there are frequently long distances between one community and another, weather forecasts and descriptions of road conditions are given regularly on the radio. Drivers are warned to be prepared for all kinds of conditions and to carry survival equipment on long journeys.

Six ferry crossings are considered to be an integral part of the road system. They are: near Fort McPherson and at Arctic Red River on the Dempster Highway; on the Canol Road at Ross River; on the Yellowknife Highway at Fort Providence; on the Mackenzie Highway at the Liard River; and on the Klondike Highway near Dawson City.

Ferries usually operate from mid-May to early November in the south while at the more northerly crossings the season is from June to mid-October. Ice bridges can be started about the middle of December and kept in operation for two to three months.

In addition to the major road network, winter roads provide surface transportation to some communities.

10.3.2 Yukon's Highways

The principal road entrance to Yukon is the Alaska Highway. Built during World War II, it is now an all-weather road which enters Yukon near Watson Lake and passes through Teslin to Whitehorse. From Whitehorse it runs roughly west to Haines Junction and then northwest, skirting Kluane National Park, to the Alaska border at Beaver Creek. Most of the highway is either paved or has bituminous surface treatment applied, but some stretches are gravel surfaced.

Another road from the south joins the Alaska Highway close to Watson Lake. It is the continuation of BC Highway 37 which runs north from its junction with the Yellowhead Highway between Smithers and Prince Rupert, BC.

The Robert Campbell Highway runs northwest from Watson Lake to a spot near Ross River where it meets the Canol Road and then to its junction with the Whitehorse-Keno Road at Carmacks. It also connects with the Nahanni Range Road, Highway 10, to Tungsten.

Three other roads cross the southern border of Yukon. Highway 7 runs south from Jake's Corner, just east of Carcross, to Atlin, BC; the Haines Road runs from Haines Junction south to Haines, Alaska; and the Klondike Highway connects Skagway with Carcross.

The Klondike Highway runs generally north from the Canada — US border just north of Skagway, through Carcross to join the Alaska Highway just south of Whitehorse. At the north of Whitehorse, the Klondike Highway leaves the Alaska Highway to run north to Dawson. Highway 11 joins at Stewart Crossing to provide access to Mayo, Elsa and Keno.

Approximately 32 km south of Dawson, the Dempster Highway runs northeast, crosses into the NWT, reaches Fort McPherson and Arctic Red River and joins the Mackenzie Highway south of Inuvik; it is Canada's first road to cross the Arctic Circle. Construction work is still going on.

Boundary Road, or the Top-of-the-World Highway, runs west from Dawson and meets the Alaska Highway at Tetlin Junction, Alaska.

10.3.3 Highways in the NWT

The Mackenzie Highway from Peace River, where it meets the network of northern Alberta's roads, is the principal highway route into the Northwest Territories. From its crossing of the border it runs to Enterprise, just south of Hay River, and then swings northwest to follow the Mackenzie River through Fort Simpson, stopping just short of Wrigley. Extension to Wrigley is planned to start in 1984-85. The next stage will then be to Norman Wells.

About 80 km northwest of Enterprise the Mackenzie Highway interests with Highway 3 (the Yellowknife Highway). A ferry at Fort Providence provides access to Rae and Yellowknife. East of Yellowknife is Highway 4 designated as the Ingraham Trail.

The Liard Highway provides an all-weather connection between Fort Nelson, BC, and the Mackenzie Highway a little south of Fort Simpson.

The Dempster Highway originates in Yukon east of Dawson City and extends to the Mackenzie Highway just south of Inuvik, NWT. The possibility of linking Inuvik by road to the Arctic Ocean at Tuktoyaktuk is being studied.

Highway 5 runs east and south from Hay River to Fort Smith on the Alberta-NWT border. A road provides access from Fort Smith to Wood Buffalo National Park. Highway 6 leaves Highway 5 east of Hay River on its way to Pine Point and Fort Resolution.

In addition to the all-weather roads, winter roads provide surface transportation over some routes during much of the year. Some of these have provided vital transportation facilities to meet specific needs as, for example, the links between Inuvik and Tuktoyaktuk and from Fort Norman to Fort Franklin. Where the expected freight warrants the labour and expense of construction, most lakes and rivers can be used. Some parts of the Mackenzie and Great Bear rivers form a temporary addition to the highway network during most years.

The all-weather roads and some of the routes over which winter roads are commonly established are shown in Figure 10-3.

10.3.4 Highway Freight Carriers

Trucking firms carry freight into Yukon and the NWT principally via the Alaska and Mackenzie highways.

In Yukon four major companies are responsible for most of the traffic: Arrow Transportation Systems; Canadian Freightways Ltd.; White Pass Transportation Co.; and Yukon Freight Lines Ltd.

Rates are dependent on the size of the shipment and the class of goods but for general cargo those shown in Table 10-5 are typical.

There are four principal highway carriers operating into the NWT, together with a number of smaller firms. The four main ones are: Grimshaw Trucking and Distributing Ltd., Edmonton; Byers Transport Ltd., Edmonton; Northwest Transport Ltd., Yellowknife; and Points North, Inuvik. These companies carry general freight over the all-weather roads and provide transportation services during winter months on ice roads as well.

Freight charges are similar to those tabulated in Table 10-5 for Yukon for equivalent loads and haul distances.

10.3.5 Buses

There is bus service into both Yukon and the NWT. In Yukon, Greyhound Coach travels the Alaska Highway from Edmonton north to Alaska through Whitehorse, Haines Junction, Destruction Bay and Beaver Creek.

Norline Coach runs three times a week (Monday, Wednesday and Friday) from Whitehorse north to Dawson, with a connecting run to Tok, Alaska, on the following days. There is a connection there with Greyhound either on to Alaska or back to Whitehorse. Norline also provides service to Carmacks.

In addition, Mar Air Bus of Haines, Alaska, has scheduled service to Whitehorse with a connection to Fairbanks.

In the NWT, Greyhound has daily service from Edmonton to Hay River. At Hay River, NWT Coach provides a connection three times a week, Monday, Wednesday and Friday, for Yellowknife, with return service the following day. NWT Coach also goes daily to Pine Point and to Fort Smith.

10.4 Water Transportation

10.4.1 General

Water transportation was the principal means of movement through the North from the earliest exploration until the 1920s and 1930s, when air travel became possible.

Just before the turn of the century, the Yukon River carried miners and their supplies from Whitehorse to the gold fields near Dawson City and steamers continued to operate on the river until fairly recent times. There is now no commercial water transportation on this river.

In the NWT the backbone of water transportation was and is the Mackenzie River. From Alexander Mackenzie's journey of 1789 until about 1826 the canoe was supreme, giving way at that time to the larger shallow-draft York boats. These in turn were replaced by steamers in the late 1800s. Around 1930, tugs and barges replaced the steamboats and they now carry hundreds of tonnes of freight each year (e.g., Northern Transportation Company Ltd. carried 348,000 tonnes in 1981).

10.4.2 The Mackenzie Watershed Routes

Within the Mackenzie watershed there are five sectors: the Mackenzie River from Hay River to Tuktoyaktuk, including the Peel River; the Canadian western Arctic; the Athabasca River and Lake Athabasca system; Great Slave Lake; and the Liard River and Fort Nelson River system.

The main barrier to navigation on the system is a 49 km section of the Slave River at Fort Smith where portaging is necessary. In addition, tows have to be broken and handled one barge at a time at the Sans Sault Rapids on the Mackenzie River, about 1046 km from Hay River.

The length of the shipping season varies from south to north; average periods are shown in Table 10-7.

In 1981, there were four shipping companies which operated over all or a part of the Mackenzie system: Cooper Barging Services; Norsask Marine Ltd.; Northern Transportation Company Ltd.; and Arctic Transportation Company.

Of these, Northern Transportation Company Ltd. (NTCL) is by far the largest, carrying about four times as much as all of the others combined. Service in Great Bear Lake and Great Bear River is non-existent, NTCL having closed out its operation there in 1980.

As tug and barge sizes have increased, problems have arisen from time to time due to low water levels in the Mackenzie River. This necessitates relaying barges through rapids and coping with the damage to tugs and barges resulting from frequent grounding. In the 1980 operating season the problem became so acute that some tugs and several barges had to be left at Inuvik over the winter, being unable to negotiate a sharp ledge (Ramparts) near Fort Good Hope, which would normally be covered with water.

NTCL reported a change in the nature of the freight carried, which is no doubt mirrored in the experience of its smaller competitors. Community re-supply tonnages have decreased somewhat, while cargoes of material for the oil and gas exploration work in the Mackenzie Delta-Beaufort Sea region have increased sharply. The company also reports a decrease in freight in the Athabasca sector, due initially (1980) to competition from other modes of transport. With the closing of the mine at Eldorado in 1982, the freight to this area decreased still further.

10.4.3 Central, Eastern and High Arctic Shipping

Much of the freight carried on the Mackenzie system is transferred to ocean vessels at Tuktoyaktuk for distribution to the Beaufort Sea area and to coastal points and islands as far east as Spence Bay. NTCL carries almost all of the freight into the area.

The eastern Arctic generally is served by the Eastern Arctic Sealift, coordinated by the Canadian Coast Guard. Cargo originates from many Canadian and foreign points and is assembled principally at Montreal. Consignees include federal and territorial government departments, Crown agencies, the United States Air Force, private companies and individuals. Tonnage carried varies from year to year in volume and make-up but bulk fuel has predominated, at least in recent years.

NTCL service to the Keewatin consists of shipments moved by rail north to Churchill, Manitoba, marshalled in Churchill and shipped by tug and barge to communities along the west coast of Hudson Bay.

The Coast Guard provides ice routing and escort services to the ships carrying this cargo. Other areas served include Frobisher Bay, Strathcona Sound, Resolute Bay, Rae Point, Little Cornwallis Island, Eureka and sites in Foxe Basin and other points as far north as Grise Fiord.

Shipments to the High Arctic are a further responsibility of the Canadian Coast Guard as either carrier or escort. Tonnage carried and cargo make-up vary with changing activity in the region.

Future developments

As the prices for petroleum fuels have risen over the past decade or so, plans for exploration of the reserves of gas and oil in the Canadian Arctic have developed. The Arctic Pilot Project is one of these and it plans the use of tankers designed to carry liquefied natural gas. Proposed designs utilize specially reinforced hulls and engines powerful enough to permit passage through ice cover up to three metres.

10.5 Rail Transportation

10.5.1 General

Railways serve only two points in Canada's North at the present time. A line from Grimshaw, Alberta, runs through Hay River to Pine Point, NWT.

10.5.2 The White Pass and Yukon Railway

A long-established narrow-gauge railroad connects Whitehorse to tidewater at Skagway, Alaska. The White Pass and Yukon Railway was built in 1898-1900 to serve the transportation needs of the prospectors and miners of the Klondike. Its route is from Skagway, Alaska, through the White Pass into British Columbia and thence north to Whitehorse, Yukon.

This once vital link has suffered economically in recent times. Following a study in 1978, some organizational changes were made and some financial assistance provided by the federal government. The rail no longer provides carriage to passengers nor to general freight inbound; in the past, ore from Yukon's mines accounted for most of the outbound movement.

10.5.3 The Great Slave Lake Railway

The Great Slave Lake Railway was constructed by Canadian National Railways in 1965. The purpose was to develop the section of Canada from northern Alberta to the area of the NWT south of Great Slave Lake and in particular to permit the exploitation of the zinc deposits there. The route selected runs from Grimshaw, Alberta, north to Hay River, NWT, and thence east to the mine site at Pine Point.

Although this line was designed for the movement of lead-zinc ore concentrates from Pine Point Mines, there have been considerable grain and lumber shipments as well. The dramatic increase in petroleum exploration in the Arctic has generated northbound traffic on the line to Hay River, the staging area for the Mackenzie River barge system.

Table 10-6

Some typical one-way bus fares over routes shown as of June 1984

From	To	Fare
Edmonton, Alberta	Watson Lake, Yukon	$125.80
	Swift River, Yukon	117.95
	Teslin, Yukon	109.95
	Johnson Crossing, Yukon	106.90
	Whitehorse, Yukon	99.00
	Haines Junction, Yukon	115.50
	Beaver Creek, Yukon	144.00
Edmonton, Alberta	Enterprise, NWT	62.20*
	Hay River, NWT	64.35*
	Fort Providence, NWT	72.40*
	Yellowknife, NWT	96.85*
Hay River, NWT	Pine Point, NWT	12.00*
Whitehorse, Yukon	Fairbanks, Alaska	93.00*

Fares via Norline Coach, Edmonton

* Quoted by Voyageur Colonial, carriage by others

Table 10-7

Average shipping periods on Mackenzie River water routes

From	To	Period	Days
Waterways, Alberta	Athabasca River	May 5-Oct.20	168
	Peace and Slave Rivers	May 18-Oct.20	155
	Lake Athabasca	June 1-Oct.20	142
Hay River, NWT	Great Slave Lake and Upper Mackenzie River	June 15-Oct.20	127
	Lower Mackenzie River	June 20-Oct.5	107
	Tuktoyaktuk	July 5-Sept.25	82
	Arctic Coastline	July 15-Sept.25	72

Note: Depending on type of vessel, the minimum average sailing time between Hay River and Tuktoyaktuk (1,806 km) is:

	Continuous Sailing	With Stops and Relays
Northbound	4-1/2 to 5-1/2 days	9 days
Southbound	7-1/2 to 9-1/2 days	12 days

Table 10-8

Tonnage carried by Eastern Sealift, 1979-83

Year	Dry cargo (tonnes)	Bulk Fuel (tonnes)
1979	9682	34,500
1980	10,033	33,400
1981	11,862	27,094
1982	10,393	28,881
1983	10,018	27,363

Table 10-1
Aircraft types used in scheduled service to various northern points

Carrier	Aircraft Type	No. of Seats
Austin Airways	HS 748	45
Calm Air	HS 748	45
First Air	HS 748	45
Northwest Territorial Airways	DC 3	23
	Lockheed Electra	65
Pacific Western Airlines	Boeing 737	115
Trans North Air	DC 3	23
	Twin Otter	17

Table 10-2
Some typical one-way fares, regular economy class, as of July, 1984

Route	Fare
Edmonton-Whitehorse	$ 236.00
Whitehorse-Dawson	176.00
Whitehorse-Inuvik	282.00
Montreal-Frobisher Bay	397.00
Frobisher Bay-Resolute	336.00
Frobisher Bay-Hall Beach	206.00
Winnipeg-Yellowknife	309.00
Yellowknife-Holman Island	398.00
Yellowknife-Cambridge Bay	161.00

Table 10-3
Some typical general cargo rates as of August, 1984

Route	Carrier	Rate $/kg	Minimum
Montreal-Frobisher Bay	Nordair	2.45	$28.00
Frobisher Bay-Resolute	Nordair	2.40	$28.00
Frobisher Bay-Hall Beach	Nordair	1.75	$28.00
Edmonton-Whitehorse	PWA	1.36	$21.00
Whitehorse-Dawson City	TNA	1.80	$16.50
Whitehorse-Inuvik	TNA	2.50	$16.50
Winnipeg-Yellowknife	NWT	1.84	$23.00
Yellowknife-Holman Island	NWT	2.93	$23.00
Yellowknife-Cambridge Bay	NWT	2.93	$23.00

Table 10-4
Typical charter rates for aircraft in the NWT

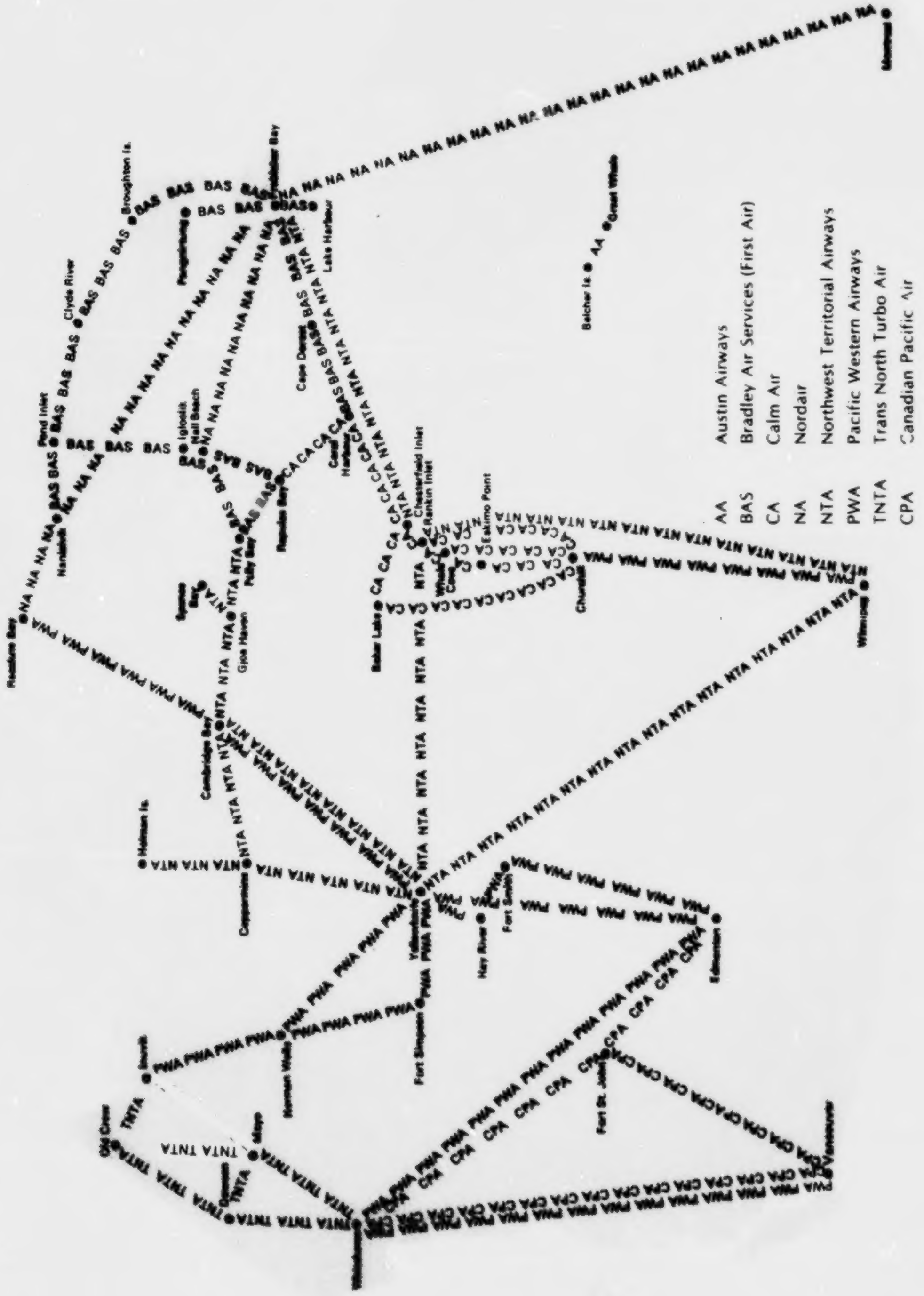
Aircraft Type	Rate $/mile	Rate $/hour
Fixed wing:		
Cessna 185	1.75	245.00
402	1.72	344.00
Twin Otter (DHC-6) 300 series	6.10	850.00
Lockheed L-188	8.50	2550.00
Helicopter:		
Bell 47 G3B1	—	260-285.00*
Hughes 500C	—	430-460.00*
Alouette 2	—	515-536.00*

* Figures quoted are for south of the 70° N (lower) and north of 70° N (higher).

Table 10-5
Typical rates for general cargo via highway transport

	Cost per kilogram	
Weight of Shipment	Edmonton to Whitehorse	Vancouver to Whitehorse
454 kg (1000 lb)	$ 20.35	$ 20.88
2,272 kg (5000 lb)	16.63	16.95
4,545 kg (10,000 lb)	14.34	15.48
9,090 kg (20,000 lb)	12.20	13.28
13,636 kg (30,000 lb)	—	12.07
18,182 kg (40,000 lb)	10.82	10.76

Figure 10-1:
Scheduled Domestic Air Services — Class I and II
Yukon and Northwest Territories



AA Austin Airways
BAS Bradley Air Services (First Air)
CA Calm Air
NA Nordair
NTA Northwest Territorial Airways
PWA Pacific Western Airways
TNTA Trans North Turbo Air
CPA Canadian Pacific Air
Resolute Bay
Nanisivik
Pond Inlet
Clyde River
Broughton Is.
Pangnirtung
Frobisher Bay
Lake Harbour
Cape Dorset
Igloolik
Hall Beach
Spence Bay
Pelly Bay
Gjoa Haven
Repulse Bay
Coral Harbour
Chesterfield Inlet
Rankin Inlet
Eskimo Point
Whale Cove
Baker Lake
Churchill
Winnipeg
Montreal
Belcher Is.
Great Whale
Cambridge Bay
Holman Is.
Coppermine
Yellowknife
Hay River
Fort Smith
Edmonton
Fort Simpson
Norman Wells
Inuvik
Old Crow
Mayo
Dawson
Whitehorse
Fort St. John
Vancouver

Figure 10-2:
Points Served by Class III (unscheduled) Air Carriers
Yukon and Northwest Territories

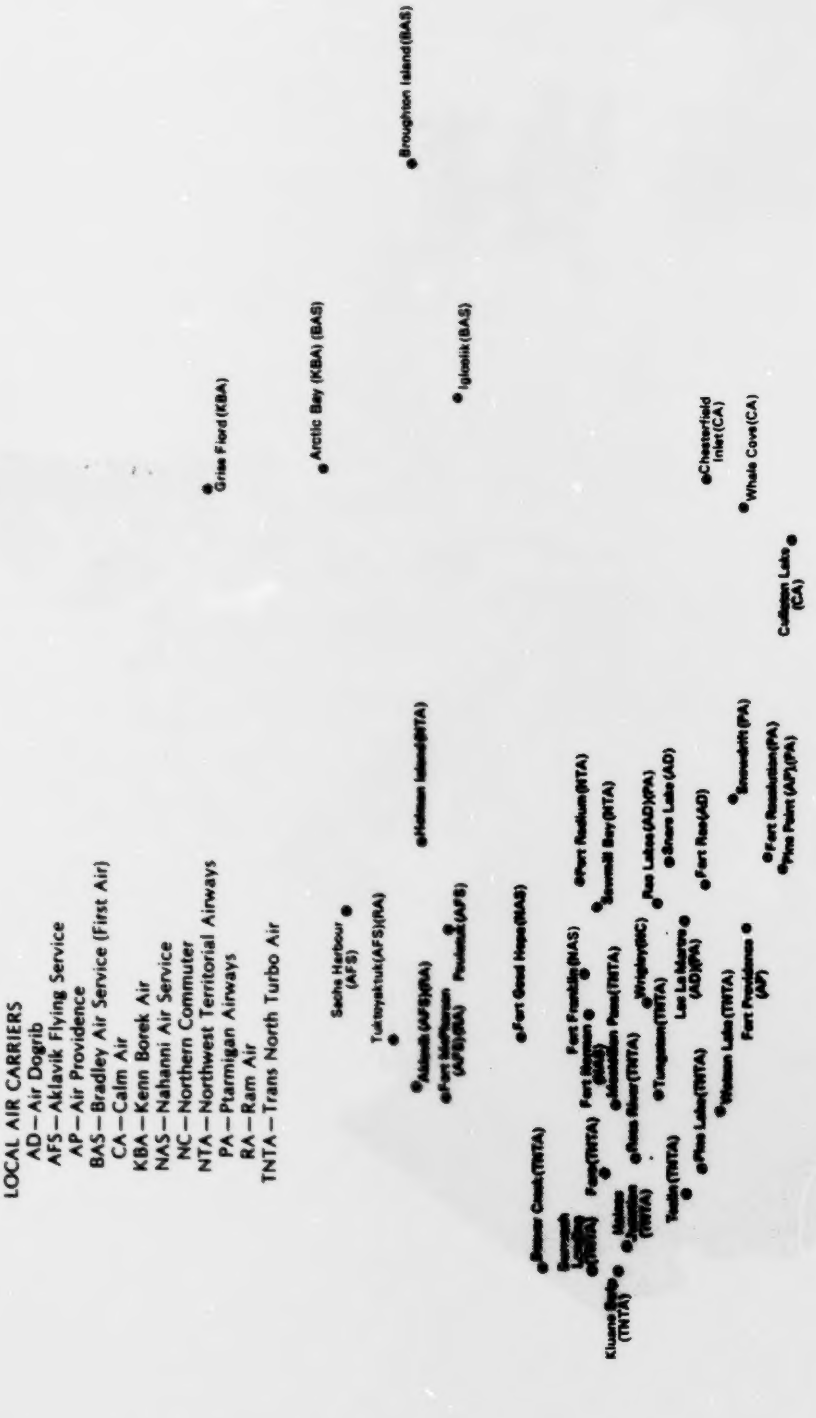
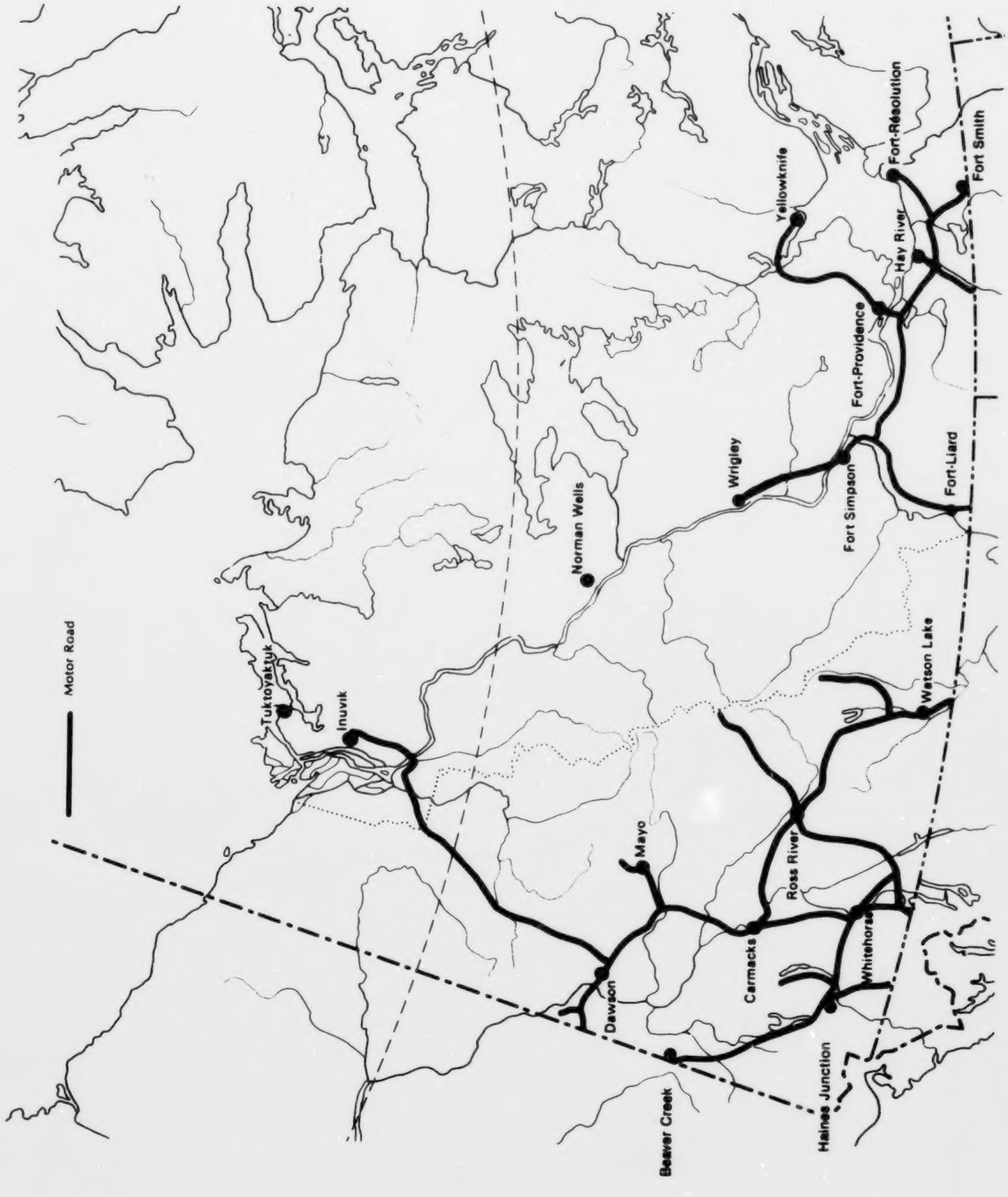

LOCAL AIR CARRIERS
AD—Air Dogrib
AFS—Aklavik Flying Service
AP—Air Providence
BAS—Bradley Air Service (First Air)
CA—Calm Air
KBA—Kenn Borek Air
NAS—Nahanni Air Service
NC—Northern Commuter
NTA—Northwest Territorial Airways
PA—Ptarmigan Airways
RA—Ram Air
TNTA—Trans North Turbo Air
Broughton Island (BAS)
Igloolik (BAS)
Arctic Bay (KBA) (BAS)
Grise Fiord (KBA)
Chesterfield Inlet (CA)
Whale Cove (CA)
(CA)
Holman Island (NTA)
Sachs Harbour (AFS)
Tuktoyaktuk (AFS)(RA)
Aklavik (AFS)(RA)
Fort McPherson (AFS)(RA)
Paulatuk (AFS)
Fort Good Hope (NAS)
Port Radium (NTA)
Sawmill Bay (NTA)
Rae Lakes (AD)(PA)
Snare Lake (AD)
Fort Rae (AD)
Snowdrift (PA)
Fort Resolution (PA)
Pine Point (AP)(PA)
Fort Franklin (NAS)
Fort Norman (NAS)
Wrigley (NC)
Tungsten (TNTA)
Lac La Martre (AD)(PA)
Watson Lake (TNTA)
Fort Providence (AP)
Beaver Creek (TNTA)
Faro (TNTA)
Ross River (TNTA)
Teslin (TNTA)
Haines Junction (TNTA)
Kluane (TNTA)

Figure 10-3:
Road Network: Yukon and Northwest Territories


Motor Road
Tuktoyaktuk
Inuvik
Norman Wells
Wrigley
Fort Simpson
Fort-Liard
Fort-Providence
Yellowknife
Hay River
Fort-Resolution
Fort Smith
Watson Lake
Ross River
Mayo
Carmacks
Whitehorse
Dawson
Haines Junction
Beaver Creek

11.0 Communications

11.1 Telephone Service

Telephone service is provided in the North by two carriers. Bell Canada serves most of the area east of 102°W longitude. West of this line and in most of the Arctic Islands NorthwesTel, one of the CN group of companies, is primarily responsible. NorthwesTel was incorporated on January 1, 1979, when it began operations in its own name, with headquarters in Whitehorse, Yukon.

In the eastern sector there are 22 communities including Little Cornwallis Island. Bell provides communication via satellite to all of these. They have full direct dialing. The Bell Canada directory which covers the NWT area is trilingual, English, French and Inuktitut.

Mobile service is available in some areas, served by bases at Frobisher Bay, NWT and Alma, Quebec. There is a range of telecommunications services available including data transmission and telex.

In the western Arctic where service is provided by NorthwesTel the situation is similar, although some locations have only mobile radio-telephone, and a few have access to radio-telephone just outside the community. This situation reverses the condition existing prior to the provision of satellite service, when the western Arctic was served better than the east.

Through the Mackenzie Delta where traffic is high NorthwesTel has two microwave channels, each of which offers 300 circuits, and the system is capable of providing three alternate routes out of the Delta.

The company serves a total of 60 communities, most of which are in Yukon or the NWT, with a few in northern BC. There are now more than 45,000 telephones connected to 64 exchanges dispersed throughout the Yukon, the western NWT and northern B.C.

Ninety-nine per cent of the telephones have direct distance dialing capability, providing virtually instant access to the world's switched telephone network.

There are over 100 radio-telephone base stations, located to provide optimum coverage of the Alaska Highway and the Mackenzie River transportation corridors.

As well as voice transmission facilities, the network offers telex, telegram, data transmission, radio and computer communications. In addition, program quality lines are provided for the CBC.

The communities of the NWT and the telephone facilities available to each are listed in Table 11-1. In Yukon most communities have telephone service provided by NorthwesTel.

11.2 Radio

Radio in Yukon and the NWT means both broadcast transmissions for information, enlightenment and entertainment and radio-telephone, a voice communication medium. Because of the totally different nature of the transmissions, these are treated separately here.

11.2.1 Radio-telephone

Although many telephone conversations are carried over part of the route by radio link, the term radio-telephone is usually reserved for simplex systems. These are characterized by the use of a single channel shared in turn by the persons communicating, so that A listens while B speaks and vice versa.

Both Bell Canada and NorthwesTel provide mobile radio-telephone service from many centres throughout the North. This provides an effective extension of the switched telephone network.

In addition to mobile telephone service, stand-alone radio-telephone is widely used. Equipment ranges from hand-held, battery-operated transceivers operated under the provisions of the General Radio Service (often erroneously called Citizen's Band, the American equivalent) to sophisticated equipment to keep parts of a widely dispersed oil exploration company in touch with one another and with field offices.

Both FM (frequency modulated) and AM (amplitude modulated) signals are employed. Except for the very lowest power transceivers used in General Radio Service, all equipment must be licensed by the Department of Communications (DOC).

11.2.2 Radio and Television Broadcast Facilities

Radio and television broadcast services in the NWT and Yukon are provided by two classes of station. There is, first, the typical licensed radio broadcast station which originates much of its own programming and also uses network feed to provide programs of more than local interest; as of summer 1984 there are two such stations in Yukon and nine in the NWT. They are listed in Table 11-2 with hours of operation, operating frequency, address of the station and name of the owner along with some indication of the type of programming offered.

In addition to the stations listed in Table 11-2 there is a very much longer list of transmitters intended to provide both radio and television service to their immediate areas.

These may be provided with a signal for re-broadcast from a production centre (see Section 11.3) via a land line or microwave link or, more usually, by a receiver which can pick up the signal broadcast by a satellite.

Some of the stations listed in Table 11-2 also appear in Table 11-3 or 11-4 because they function as television repeaters as well as radio broadcasters.

There may or may not be provision for the addition of any local program input (see Section 11.3). Table 11-3 shows station locations, CBC program feed if any and brief notes on equipment for stations in Yukon. Table 11-4 provides the same information for the NWT. See the end of each table for the meaning of abbreviations used.

11.3 Radio and Television Programming

An increasing proportion of the programming on radio and, to a lesser extent, television north of 60°N is prepared especially for the North. The stations listed in Table 11-2 produce their own programs and use such network material as suits their needs. Much of the radio production work is done by the CBC Northern Service, which has its headquarters in Ottawa from which four production centres in the NWT and one in Yukon are administered. The Inuit Broadcasting Corporation (IBC) produces television programs in the North and local radio societies, predominantly in the NWT, prepare material to be broadcast to their own immediate areas.

In the NWT, the Inuvialuit Communications Society in Inuvik will be producing some TV programs and the NWT Native Communictions Society in Yellowknife plans to be producing by summer, 1985. In Yukon, Northern Native Broadcasting Yukon Ltd. will generate its own program material starting in autumn, 1984.

11.3.1 CBC Northern Service, Radio

There are important decisions to be made in the North on resource development, the resolution of aboriginal rights and native land claims and on the potential development of both territories, among others. These decisions depend on current and comprehensive information which only the CBC is in a position to provide. The challenge is a formidable one. While the audience is only 75,000 persons, it is scattered over 4,000,000 km^2, spans four time zones and uses eight different languages. Some highlights of the 1983-84 year follow:

25 Years in Radio

25th anniversary celebrations were held in Whitehorse, Dawson City and Yellowknife, where the CBC Northern Service opened its first radio stations when it was established in 1958. Special programming, a fiddle festival, public receptions and open houses attracted many members of the public.

Program Highlights — Radio and TV

The NWT territorial election in November, 1983 was covered live on radio and television. For Northern Service TV, it was the first opportunity to deliver election coverage live to audiences throughout the North, feeding the northern satellite network by means of a mobile uplink. Television coverage was in English, and radio coverage in Inuktitut, Inuvialuktun, Slavey, Dogrib, Hareskin, Chipewyan, Loucheux and English.

Both radio and TV carried live coverage of the First Ministers' Conference on Aboriginal Rights, held in Ottawa in March, 1984. Radio coverage was in English, Inuktitut and Slavey.

The 14th Arctic Winter Games, held in Yellowknife, were covered daily on radio and TV.

A new weekly half-hour TV program, *The Dene Series*, presented Dene life and tradition through a mixture of music, interviews and story-telling. It was produced only in the Dene languages: Slavey, Dogrib and Chipewyan.

Assistance to Other Broadcasters

Northern Service provided:

- continued distribution of independent Inuktitut TV programs from the Inuit Broadcasting Corporation and Taqramiut Nipingat.
- temporary replacement transmitters to private community stations in Baker Lake and Tuktoyaktuk.
- technical equipment and maintenance to a private affiliate in Atlin, B.C.

Training

Projects included:

- Inter-cultural workshops for staff at Whitehorse, Inuvik and Yellowknife.
- Legal seminars for English and native-language broacasters.
- The first northern training in supervisory skills (Yellowknife).
- Specialized training for Inuit broadcasters in coverage of the Legislative Assembly.

Broadcast Recordings

Four new releases included the Northern Service's first album of children's music.

Special Projects

As the first official performance at the new Arts and Cultural Centre in Yellowknife, the CBC Northern Service produced a *True North* concert featuring Sylvia Tyson and a variety of northern entertainers.

CBC radio programming from Whitehorse is directed to a largely English-speaking audience and little native language programming originates there. The newsroom has a territorial, local and northern bias while having access to the news-gathering facilities of the entire network. It can thus keep northerners aware of matters of local, national and international concern and its presence there provides background on northern events for CBC network centres in southern Canada. Through its various program vehicles the service provides news, weather, sports, community announcements and a comprehensive range of interviews and information on all aspects of life in Yukon.

Radio programs from Frobisher Bay are in Inuktitut and English, except on the weekends when network programs in English only are used predominantly. This is the AA-4 service shown in column 2 of Table 11-4. A typical broadcast day during the week, starting at 0600 and running to 2400 hours, would contain 7 hours of network material. Of the remaining 11 hours, 7-1/2 hours would be in Inuktitut.

11.3.2 Radio Programming other than CBC

At all settlements underlined in Table 11-4, there is a radio society. By arrangement with the CBC the society in a community takes over the local repeater at a pre-arranged time and broadcasts locally produced programming to its own area. This enables a local group to broadcast music of its own choosing, news in the local dialect or other items of community interest. The facility can be, and has been, used at times to direct the search for lost hunting parties.

In Yukon, native language programming has taken another form. A native communication society, N.N.B.Y., has established a network of stations at Haines Junction, Old Crow, Pelly Crossing, Ross River and Whitehorse. Programming will include native languages, covering community information and music.

11.3.3 Television Programming Transmitted by CBC

Northerners do not yet enjoy on television the level of CBC regional programming available to them on radio. CBC's northern television operation, begun in 1979, is at a much earlier stage of development.

CBC network television programming is available to about 97 per cent of the northern audience, through satellite transmission from Toronto. The challenge faced in the North is to supplement network programs with an adequate regional service, particularly information programming. Northern Service operates a single television production centre, located in Yellowknife, with a staff of 13, electronic and film cameras, and editing facilities. As yet, there is no video up-link available in Yellowknife, with the result that programming produced there must be flown south in order to be broadcast back to the North via satellite.

In January of 1983, a Yellowknife-produced half-hour series was launched. Called *Northland*, the series replaces the previous *Our Ways* programs, and documents in film the cultural heritage and traditional life-styles of northern people. Half of the 13 episodes of *Northland* were produced by the CBC, with the balance co-produced with independent film-makers. Like *Focus North*, a weekly half-hour current affairs series originating in Yellowknife, *Northland* is broadcast in English, Inuktitut, and a Dene language.

The Northern Service continues to produce a weekly quarter-hour Inuktitut program entitled *Tarqravut*. During 1982-83 the production of *Tarqravut* was moved from Montreal to Ottawa, as part of the integration of the southern television operations which handle scheduling, public service announcements, and production of station breaks.

The CBC has continued to share its television distribution facilities in the eastern half of the NWT with the Inuit Broadcasting Corporation (IBC), an independent native production company which produces five hours a week of Inuktitut television from studios in the NWT and northern Quebec. IBC operates a video up-link in Frobisher Bay from where it can access the CBC satellite channel at specified times to distribute its programs to about 30 Inuit communities in Labrador, Quebec, and the NWT.

Most of the non-English language television is in Inuktitut and is produced and broadcast by the Inuit Broadcasting Corporation (IBC). In order to understand the situation it is necessary to describe the origin of IBC.

In 1978-79 Inukshuk, a project formulated by the Inuit Tapirisat of Canada (ITC) was funded by the departments of Communications (DOC) and Indian and Northern Affairs (INAC) under an experimental DOC program using the ANIK-B satellite. Under the same program, Inuit of Northern Quebec, through their communications society, Taqramiut Nipingat Inc. (TNI), organized a similar project called Naalakvik II. The objective was to develop native expertise in program production and broadcasting. Satellite earth stations were set up in Eskimo Point, Pond Inlet, Cambridge Bay, Igloolik and Baker Lake. There was a production centre at Baker Lake and a studio in Frobisher Bay. Experimental up-link facilities were provided at Baker Lake, Frobisher Bay and in Saglouc, Quebec.

Over the three-year life of the project ITC worked with the Pond Inlet Television Society to produce programming and to purchase material from Cambridge Bay and Eskimo Point.

The experimental program developed the skills and experience which were needed and one result was the establishment of IBC. This is an independent entity whose board represents all the Inuit regions of Canada, including the NWT, Northern Quebec and Labrador. The IBC is licensed to broadcast by CRTC and it operates production centres at Baker Lake and Frobisher Bay.

There are also less well equipped production centres at Cambridge Bay, Eskimo Point and Pond Inlet. Material originating at these locations is sent to Baker Lake or Frobisher, where it is incorporated into the programs produced there.

TNI, as an affiliate of IBC, has a base of operations in Saglouc, Quebec. Footage produced there is also used in the preparation of IBC programs.

At the present time IBC produces about four hours of programs each week. Its up-link in Frobisher Bay started providing access to the satellite directly on April 19, 1982.

In Frobisher Bay, Nunatsiakmiut, an Inuit communication society funded by the Department of the Secretary of State, produces 15 to 20 quarter-hour shows for television each year. These are sold to the CBC for use in the Northern Service broadcasts.

11.3.4 Television Programming, Other

There are an increasing number of TV series available to northerners. One of the alternatives to CBC television coverage in most of the North is provided via a package of four signals available by the CANCOM satellite and pay TV. As a part of the service description included with the CANCOM application to the CRTC it was specified that there would be time allocated for native language programming, when available, for up to ten hours per week. However, as of early 1982 programming was entirely in English.

The CANCOM network of licensed stations is increasing rapidly. As of March 1982, earth receiving stations and low power television repeaters were located at the places shown in Table 11-5.

Cable television service is available in Whitehorse and in Yellowknife as well as in Fort Smith and Watson Lake.

11.4 Newspapers

The newspapers listed below are those whose names appear in Canadian Advertisers Rates and Data. There may be community newsletters in other centres. Unless otherwise noted all papers listed below are published weekly.

11.4.1 Yukon

Whitehorse:
Whitehorse Star
2149 Second Avenue
Whitehorse Y1A 1C5
(Monday, Wednesday, Friday)

Yukon News
211 Wood Street
Whitehorse Y1A 2E4
(Monday, Wednesday, Friday)

Yukon Indian News
22 Nisutlin Drive
Whitehorse Y1A 3S5
(every other Thursday)

11.4.2 Northwest Territories

Fort Smith:
Slave River Journal
P.O. Box 990
Fort Smith X0E 0P0

Frobisher Bay:
Nunatsiaq News
Box 8
Frobisher Bay X0A OHO

Hay River:
The Hub
Box 1250
Hay River XOE ORO

Inuvik:
The Drum
PO Box 2660
Inuvik XOE OTO

Yellowknife:
Native Press
Box 1919
Yellowknife XOE 1H0
(Every other Thursday)

News/North
Box 2820
Yellowknife XOE 1HO

Yellowknifer
Box 2820
Yellowknife X1A 2R1

11.5 Postal and Courier Service

11.5.1 Postal Service

Canada Post provides mail service throughout the North. There are 72 post offices, some of which are operated by individuals or firms on behalf of the corporation. Of these, Tuktoyaktuk is one of the farthest north, Beaver Creek is the most westerly and Broughton Island is the farthest to the east.

Mail is routed to the Arctic through various southern points. The mail base for the eastern Arctic is Montreal, and all mail originating east of Winnipeg for Fort Chimo, Frobisher Bay, Hall Beach and Resolute goes through that location. Mail originating west of Winnipeg for eastern Arctic destinations is gathered in Edmonton for shipment to Resolute for onward transmission. All mail for Keewatin District goes through Churchill and for Mackenzie through Edmonton. Yukon mail, depending upon the point of origin, is handled at either Edmonton or Vancouver.

11.5.2 Courier Service

The major couriers (Banker's Dispatch and Purolator) offer service to many northern points including Whitehorse and Yellowknife. Both have a surcharge of $25.00 to $35.00 for carriage beyond Edmonton and the consignee is expected to pick up the shipment at the airline counter in some cities.

Table 11-1
Telephone service in NWT

	Service by Bell Canada[1]	Service by NorthwesTel[2]		
	Telephone via	Telephone via		HF
Community	Satellite	Satellite	Microwave Link	Radio Telephone
Aklavik			X	
Arctic Bay	X			
Arctic Red River			X	
Baker Lake	X			
Bathurst Inlet				X
Broughton Island	X			
Cambridge Bay			X	
Cape Dorset	X			
Chesterfield Inlet	X			
Clyde River	X			
Colville Lake				X
Coppermine			X	
Coral Harbour	X			
Detah				X
Enterprise			X	
Eskimo Point	X			
Fort Franklin			X	
Fort Good Hope			X	
Fort Liard			X	
Fort McPherson			X	
Fort Norman			X	
Fort Providence			X	
Fort Resolution			X	
Fort Simpson			X	
Fort Smith			X	
Frobisher Bay	X			
Gjoa Haven			X	
Grise Fiord	X			
Hall Beach	X			
Hay River			X	
Holma		X		
Igloolik	X			
Inuvik			X	
Jean Marie River				X
Kakisa				X
Lac La Martre				X
Lake Harbour	X			
Lirtle Cornwallis Island	X			
Nahanni Butte				X
Nanisivik	X			
Norman Wells			X	
Pangnirtung	X			
Paulatuk			X	
Pelly Bay			X	

Table 11-1 *(Continued)*

Table 11-1 *(Continued)*
Telephone service in NWT

	Service by Bell Canada[1]	Service by NorthwesTel[2]		
	Telephone via Satellite	Telephone via		HF Radio Telephone
Community		Satellite	Microwave Link	
Pine Point			X	
Pond Inlet	X			
Port Radium			X	
Rae Edzo			X	
Rae Lakes				X
Rankin Inlet	X			
Repulse Bay	X			
Resolute	X			
Sachs Harbour		X		
Sanikiluaq	X			
Snare Lake				X
Snowdrift		X		
Spence Bay		X		
Trout Lake				X
Tuktoyaktuk			X	
Tungsten			X	
Whale Cove	X			
Wrigley			X	
Yellowknife			X	

Source[1]: Bell Canada, Quebec City
Source[2]: NWT Data Book 1984/85

Table 11-2
Radio stations licensed by CRTC in Yukon and NWT

Location:

Whitehorse, Yukon CHWH AM 3103-3rd Avenue Box 4430, Y1A 1E5 Tel: (403)667-6261	Dial 570
On Air:	0600-0100 hours
Owner:	Canadian Broadcasting Corporation
News/Public Affairs:	0600-0900, 1200-1400 & 1500-1800 hours daily
News Deadlines:	Open 0600-1800 hours daily

CKRW AM 203-4103 4th Avenue Y1A 1H6 Tel: (403)667-4247	Dial 610
On Air:	24 hours
Owner:	Klondike Broadcasting Company Ltd.
Format:	Adult Contemporary, Oldies, VHF radios, radio-phone
News Deadlines:	Open 0600-2400 hours

Table 11-2 *(Continued)*

CFB Alert, NWT CHAR FM Bldg. 21, CFB Alert MPO 310, Belleville, Ontario K0K 3S0	Dial 105.9
On Air:	24 hours. Non-commercial
Owner:	Department of National Defence
Format:	Variety
News Deadlines:	Local items only

Baker Lake, NWT CKQN FM Box 4, X0C 0A0 Tel: (819)793-2970	
On Air:	1230-1330 & 1800-2100 hours Non-commercial
Owner:	Qamanituap Naalautaa Society
Format:	Multi, Inuktitut and English

Table 11-2 *(Continued)*
Radio stations licensed by CRTC in Yukon and NWT

Fort Simpson, NWT	
CFMR AM	Dial 1490
Box 119, X0E 0N0	
On Air:	Irregular each week Non-commercial
Owner:	Fort Simpson Broadcasting Society
Format:	Multi, Inuktitut and English
Frobisher Bay, NWT	
CFFB AM	Dial 1240
Box 490, X0A 0H0	
Tel: (819)979-5353	
On Air:	0600-0100 hours
Owner:	Canadian Broadcasting Corporation
Format:	Multi-format
News/Public Affairs:	0600-0900, 1200-1300 & 1500-1800 hours
News Deadlines:	Open 0600-1800 hours daily
Hay River, NWT	
CKHR FM	Dial 107.3
Diamond Jenness High School	
Box 949, XOE ORO	
Tel: (403)874-2547	
On Air:	0900-2400 hours (18 hours Friday and Saturday)
Owner:	Hay River Broadcasting Society
Format:	Multi, Educational, Music
Inuvik, NWT	
CHAK	Dial 860
MacKenzie Road, Bag Service 8, X0E 0T0	
Tel: (403)979-4411	
On Air:	0600-0100 hours
Owner:	Canadian Broadcasting Corporation
Format:	Multi-Format
News/Public Affairs:	0600-0900, 1200-1400 & 1600-1800 hours daily
News Deadlines:	Open 0600-1800 hours daily
Location:	
Rankin Inlet, NWT	
CBQR AM	Dial 1160
Rankin Inlet, XOC OGO	
Tel: (819)645-2885	
On Air:	0600-0100 hours
Owner:	Canadian Broadcasting Corporation
Format:	Multi-format
News/Public Affairs:	1130-1230 and 1730-1830
News Deadlines:	Open 0600-1800 hours daily
Yellowknife, NWT	
CFYK AM	Dial 1340
Box 160, X0E 1H0	
Tel: (403)873-3464	
On Air:	0600-0100 hours
Owner:	Canadian Broadcasting Corporation
Format:	Multi-format
News/Public Affairs:	0600-0900, 1200-1800 hours daily
News Deadlines:	Open 0600-1800 hours daily
CJCD AM	Dial 1240
5103-51st Street	
Box 218, X1A 2N2	
Tel: (403)920-4636	
On Air:	0600-0100 hours
Owner:	CFCD Radio Ltd.
Parent Company:	Yellowknife Broadcasters Ltd., 50%
Format:	Adult Contemporary

Table 11-3
Radio and television repeater stations in Yukon as of August 1984

			Reception		
Community	CBC Yukon Radio	CBC TV Radio C	Radio	Television	
Beaver Creek	yes	yes	lprt	CORB	
Burwash Landing	yes	no	off-air from Destruction Bay	—	
Carcross/Tagish	yes	yes	off-air from Whitehorse	CORB	
Carmacks	yes	yes	lprt	CORB	
Dawson City	yes	yes	lprt	CBC	tvro lptv
Destruction Bay	yes	yes	lprt	CORB	
Elsa/Calumet	yes	yes	lprt	CBC	lptv
Faro	yes	yes	lprt	CBC	tvro lptv
Haines Junction	yes	yes	lprt	CORB	
Jakes Corner	yes	yes	lprt	CORB	
Keno Hill	no	yes	—	CBC	tvro lptv
Mayo	yes	yes	lprt	CBC	tvro lptv
Miles Ridge	no	yes	—	CORB	
Old Crow	no	yes	—	CORB	
Pelly Crossing	no	yes	—	CORB	
Ross River	yes	yes	lprt	CORB	
Stewart Crossing	no	yes	—	CORB	
Swift River	yes	no	lprt	—	
Teslin	yes	yes	lprt	CORB	
Watson Lake	yes	yes	lprt	CBC	tvro lptv
Whitehorse	yes	yes	CBC-owned station	Telesat CBC	tvro lptv

CORB — community owned rebroadcaster
tvro — television receive only satellite dish
lptv — low power television transmitter
lprt — low power radio transmitter

Table 11-4

Radio and television repeater stations in NWT as of August 1984

Community (population)	Radio service & TV service	Notes on equipment, facilities
Aklavik (818)	CBC-Inuvik CBC-C	None. TV & radio off-air Inuvik.
Arctic Bay (401)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Arctic Red River (120)	CBC-Inuvik CBC-C	GNWT tvro, 1ptv, 1prt.
Baker Lake (1062)	AA-4 CBC-B	Telesat tvro, CBC lptv, private lprt.
Broughton Island (323)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Cambridge Bay (907)	CBC-Inuvik CBC-C	Telesat tvro, CBC lptv, lprt.
Cape Dorset (763)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Chesterfield Inlet (275)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Clyde River (443)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Coppermine (761)	CBC-Inuvik CBC-C	CBC tvro, lptv, lprt.
Coral Harbour (425)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Detah (158)	CBC-YK CBC-C	None. TV & radio off-air Yellowknife
Eskimo Point (994)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Fort Franklin (545)	CBC-Inuvik CBC-C	CBC tvro, lptv, lprt.
Fort Good Hope (460)	CBC-Inuvik CBC-C	CBC tvto, lptv, lprt.
Fort Liard (342)	CBC-YK CBC-C	GNWT tvro, lptv, lprt.
Fort McPherson (632)	CBC-Inuvik CBC-C	CBC tvro, 1ptv, 1prt.
Fort Norman (359)	CBC-Inuvik CBC-C	GNWT tvro, lptv, CBC lprt.
Fort Providence (554)	CBC-YK CBC-C	CBC tvro, lptv, lprt.
Fort Resolution (512)	CBC-YK CBC-C	CBC tvro, lptv lprt.
Fort Simpson (992)	CBC-YK CBC-C	CBC tvro, lptv, lprt.
Fort Smith (2297)	CBC-YK CBC-C	CBC tvro, lptv, lprt.
Frobisher Bay (2419)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Gjoa Haven (517)	AA-4 CBC-C	CBC tvro, lptv, lprt.
Grise Fiord (106)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Hall Beach (400)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Hay River (3129)	CBC-YK CBC-C	CBC tvro, lptv, lprt.
Holman Island (358)	CBC-Inuvik CBC-C	GNWT tvro, lptv, lprt.
Igloolik (798)	AA-4 CBC-B	CBC tvro, lptv lprt.
Inuvik (2929)	CBC-Inuvik CBC-C	Telesat tvro, CBC lptv, lprt.
Lac La Martre (238)	CBC-YK CBC-C	GNWT tvro, lptv, lprt.
Lake Harbour (297)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Nanisivik (278)	BA-2 CBC-B	Private tvro, lptv, lprt.
Norman Wells (384)	CBC-Inuvik CBC-C	CBC tvro, lptv, lprt.
Pangnirtung (899)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Paulatuk (181)	CBC-Inuvik CBC-C	GNWT tvro, lptv lprt.
Pelly Bay (270)	AA-4 CBC-C	GNWT, tvro, lptv, lprt.
Pine Point (1647)	CBC-YK CBC-C	CBC tvro, lptv, lprt.
Pond Inlet (647)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Rae Edzo (1314)	CBC-YK CBC-C	CBC lptv, lprt Terres tv feed.
Rae Lakes (200)	CBC-Yellowknife CBC-C	GNWT tvro, lptv lprt.
Rankin Inlet (1007)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.
Repulse Bay (328)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Resolute (155)	AA-4 CBC-B	Telesat tvro, CBC lptv, lprt.

Table 11-4 *(Continued)*
Radio and television repeater stations in NWT as of August 1984

Community (population)	Radio service & TV service	Notes on equipment, facilities
Sachs Harbour (172)	CBC-Inuvik CBC-C	GNWT tvro, lptv, lprt.
Yellowknife (9550)	CBC-YK CBC-C	Telesat tvro, CBC lptv, lprt.
Sanikiluaq (370)	AA-4 CBC-B	GNWT tvro, lptv, private lprt.
Snowdrift (285)	CBC-YK CBC-C	GNWT tvro, lptv, lprt.
Spence Bay (465)	AA-4 CBC-C	Telesat tvro, CBC lptv, lprt.
Tuktoyaktuk (762)	CBC-Inuvik CBC-C	CBC tvro, lptv, lprt.
Tungsten (508)	CBC-Whitehorse CBC-C	Private tvro, lptv, lprt.
Whale Cove (188)	AA-4 CBC-B	GNWT tvro, lptv, lprt.
Wrigley (162)	CBC-YK CBC-C	CBC lprt, GNWT tvro, lptv.

Guide to Abbreviations:

GNWT — Government of the Northwest Territories
YK — Yellowknife
tvro — television receive only satellite dish
lptv — low power television transmitter
lprt — low power radio transmitter
Terres — terrestrial feed, such as land line or microwave
AA-4 — CBC Northern Service radio from Frobisher Bay and Rankin Inlet
BA-2 — CBC English network radio with some Ontario programming
(824) — population figures in parentheses are for December 1980 from the NWT government Bureau of Statistics
CBC-B — CBC English network television, Atlantic time zone release
CBC-C — CBC English network television, Pacific time zone release
— where locations are underlined, it indicates that there is a radio society in the settlement

Table 11-5
Some of the locations of low power repeaters relaying CANCOM signal as of August 1984

Aklavik
Cambridge Bay
Dawson City
Faro
Fort Simpson
Frobisher Bay
Inuvik
Hay River
Takhini/McPherson
Wolfe Creek/Carcross Corners

12.0 Socio-Economic Infrastructure

12.1 General

This is a time of transition in Canada's North. Traditional lifestyles are giving way as competing uses for land and activities foreign to the region make their maintenance difficult, while the possibility of participation in the wage economy provides an alternative for some of those affected.

12.2 Associations and Organizations

12.2.1 General

Associations and organizations in Yukon and the Northwest Territories, as elsewhere, range from the purely social and completely informal to structural entities with distinct ties to the political, governmental or economic fabric. This section will deal only with those having a more or less formal nature and in particular with those which are registered under the Societies Ordinances of the NWT or Yukon.

Registration as a society provides members with protection from unlimited liability in the event of suit, since any acts of the society are deemed to be acts of that legal entity and not of its individual members.

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Many Hunters and Trappers associations function largely as clubs for the interchange of information and contact with the territorial government, while others are more active and engage in the marketing of furs and country foods, act as outfitters to visitors from outside and advise the territorial government on wildlife legislation.

One role of the Hunters and Trappers associations is the exercise of discretionary power in the distribution among their members of the right to hunt polar bear and muskox. Hunting of these species is controlled by the territorial government, which allows the associations to allocate the quota among individual hunters in the community.

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12.3 Business Organizations

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12.3.1 Yukon Businesses

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Mining and lumbering are also characterized by the presence of major corporations with effective control outside the territory. Placer mining is an exception in that there are many small companies in this field, some of which are locally owned.

While the major established companies continue to operate and to expand when the opportunity exists, there is little tendency for new large companies to seek to become established in Yukon. Most of the economic growth is due to the development of locally controlled firms induced in part by mining, mineral and oil and gas exploration.

Co-operatives are not a major factor in Yukon. There were only three operating in 1983, at Old Crow, Teslin and Ross River. All were owned by natives.

The Yukon Indian Development Corporation, currently being established, is a new business offering prospects for native economic growth. It will function more or less as a holding company, providing finances and management to operating divisions which may be active in a variety of commercial and industrial sectors.

Supplementing the data tabulated in Table 12-1, the Yukon Economic Development Department has a record of a total of over 1300 establishments distributed by industry sector as shown in Table 12-2.

Although large companies controlled outside seem to have a dominant position in the local economy, they are outnumbered by businesses which are smaller in terms of number of employees. Table 12-3 shows how the Yukon establishments (other than governmental) of Table 12-1 are distributed with respect to number of employees. If the number of companies having only the proprietor employed were added, the preponderance of small organizations would be still greater. A high percentage of small businesses is not in itself unusual; however, the almost complete absence of any locally registered companies of significant size is much less common in Canada as a whole.

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12.3.2 NWT Businesses

Co-operatives started to operate in the Canadian North in 1959 and, in contrast to Yukon, are an important factor in the NWT. There are 38 active NWT co-operatives distributed throughout the territory, with a combined annual sales volume of around $23 million. A federation of arctic co-operatives was formed in 1972 to further the development of local organizations. Now called Arctic Co-operatives Ltd., it operates retail outlets for members' craft products in Yellowknife, Whitehorse, Edmonton, Inuvik and Churhill, a wholesale arts and crafts showroom in Ottawa, and provides education, training, accounting, purchasing and other development services to its owner-member co-operatives.

Most co-operatives operate retail stores serving as general stores in their communities; they also operate specialized services, such as hotels, outfitting and guiding services, various municipal services and craft workshops.

It is estimated that over 350 northerners are directly employed by the northern co-operatives, with almost 2000 others obtaining indirect employment through sale of their produce through local co-ops.

Moreover, it has generally been acknowledged that co-operatives have served as an important training ground for northern people, as they were locally autonomous bodies long before local self-government in the municipal field was introduced to the arctic regions. Thus, co-op boards of directors and management structures set up in the communities, with budget-setting responsibilities and annual elections, helped familiarize many northerners with these business functions. As a result, many other small businesses which have opened in the North have benefited from employing people who have learned management and marketing skills from co-operative employment.

As of 1984, there were 3158 companies registered in the NWT, of which 1200 were incorporated in the territories. In terms of number of establishments, small businesses predominate. Table 12-4 shows the number of employees by industry group in the NWT.

A new business form now active in the territories is the development corporation. Native-owned development corporations range from the community/band operated Rae Edzo Development Corporation to the four regional organizations — the Inuit Development Corporation (now renamed Nunasi) in the eastern Arctic, the Inuvialuit Development Corporation in the northwestern Arctic, the Metis Development Corporation in the Mackenzie Valley and the Dene Development Corporation in the western Arctic. These corporations provide managerial and financial assistance to operating divisions active in many diverse fields. These include the owning and managing of real estate, operation of taxis and hotels and labour contracting and brokerage in the construction industry. There are also non-native development corporations operating in the NWT such as the Hay River and Area Economic Development Corporation, owned by a group of businessmen and active in shipping and the general community re-supply fields.

12.4 Business Regulation and Taxes

12.4.1 Licences and Regulations

In the Northwest Territories, business licences are the responsibility of municipal (including hamlet) councils under the authority provided by the Municipal Ordinance.

In unorganized areas, the Government of the Northwest Territories (GNWT) retains the licensing function under the provisions of the Business Licence Ordinance.

These provisions apply to essentially all business except direct sellers (i.e. door-to-door vendors), who are controlled by the GNWT under the Consumer's Protection Ordinance, and hunting and trapping. Entry into hunting and trapping is dealt with under Fur Export and the Game Ordinances and is administered by territorial wildlife officials.

Native residents of the NWT have traditional hunting and trapping rights for family use, but for commercial activities they require a General Hunting Licence. This does not cover the taking of muskox or polar bear, both of which are controlled through the local Hunters and Trappers associations.

Non-native residents may apply for a licence after two years' residence in the NWT.

The situation in Yukon is somewhat different. All businesses except mining exploration and development, oil and gas exploration and development, and newspaper publishing require licensing under the Business Licence Act by the Government of Yukon; other exceptions are businesses in Whitehorse, Faro, Watson Lake or Dawson City, where licences are granted by the municipality under the authority of the Municipal Act.

Mineral exploration and development are governed by the *Canada Mining Regulations* promulgated under the *Public Lands Grants Act*, the *Territorial Lands Act* and the *Oil and Gas Production and Conservation Act*.

Newspaper publishing is dealt with under the Newspaper Ordinance.

12.4.2 Taxes — Personal, Land, Business

With a minor exception concerning business tax, the taxation situation is the same in Yukon as in the NWT. Both territories levy income and corporate taxes which are collected as in the provinces by the federal government acting on behalf of the territories.

There is authority for the imposition of sales tax, but none is levied at present except on the sale of motor fuel, liquor and tobacco.

Property taxes are levied by the territorial governments or the larger municipalities, but in both cases are collected by the territorial governments.

There is no business tax as such in Yukon, although an annual licence fee produces some revenue. In the NWT, municipalities have the power to collect business taxes and do so, while the territorial government retains the taxing authority in the unorganized areas.

Neither territorial government collects any tax or royalty on the exploitation of minerals or other natural resources, which are owned by the federal government.

12.5 Health Facilities

In both the Northwest Territories and Yukon, responsibility for general health care and public health programs is shared by the federal and the territorial governments.

12.5.1 Institutions, Location, Size, Services

In the NWT, there are seven hospitals, three of which are operated by the Medical Services Branch of Health and Welfare Canada — the Inuvik General (55 beds) and cottage hospitals at Fort Simpson (12 beds) and Rae Edzo (12 beds). In addition, the Medical Services Branch operates: 39 nursing stations, which are equipped and staffed to handle emergencies, short-term treatment and preventive health programs; eight health centres; and 12 health stations, dispensaries operated by local community health representatives and having scheduled visits by nurses. These institutions are staffed by approximately 194 federally employed nurses.

The NWT Department of Health operates four hospitals, including the Frobisher Bay Hospital. Stanton Yellowknife Hospital (72 beds) provides a wide range of in- and out-patient services. It functions as a laboratory for other territorial hospitals and nursing stations, and has on staff specialists in many areas including obstetrics and gynecology, pediatrics, psychiatry and opthalmology; in cooperation with the Elks Lodge it has developed an audiology department with a deafness detection program and training for technicians. The H.H. Williams Memorial Hospital in Hay River is a 50-bed hospital providing acute and chronic care, emergency out-patient services, public and environmental health programs, social services and a home care program. The Fort Smith Health Centre (25 beds) has offices for visiting specialists who come from Stanton Yellowknife Hospital on a regular basis; it also offers out-patient and emergency services, extended chronic care and community home care.

Yukon's five hospitals are located in Whitehorse, Mayo, Faro, Watson Lake and Dawson City. There is also a nursing station at Old Crow. All facilities combined have a total of 159 beds and 42 cribs. In addition, there are health stations at Beaver Creek, Burwash Landing, Carcross and Upper Liard, as well as health centres (staffed by public health nurses) at Destruction Bay, Haines Junction, Whitehorse, Teslin, Watson Lake, Ross River, Faro, Carmacks, Pelly Crossing and Mayo.

As in the NWT, existing services are augmented by visiting specialists in such fields as internal medicine, pediatrics, otolaryngology, dermatology, oncology, ophthalmology and orthopedics. Clinics are held several times a year in Whitehorse by specialists from outside Yukon.

12.5.2 Health Programs, Insurance, Scope, Impact

In both the NWT and Yukon, the Medical Services Branch of Health and Welfare Canada provides and administers major programs in public health, including child and maternal care, family planning, tuberculosis control, infectious and chronic disease control, school health (including dental), environmental and occupational health and health education. A federally operated dental therapy school at Fort Smith trains therapists from both territories for work in outlying communities; dental service is provided by private practitioners in the largest communities, and by government dentists and therapists elsewhere.

As a result of expanded medical services and health education in both the NWT and Yukon, there has been a steady decline in the incidence of TB, measles and infant mortality. In an effort to increase the health awareness of native people, the Medical Services Branch has a health officer appointed to the Council for Yukon Indians, while in the NWT it is helping native northerners prepare for employment with the branch. The promotion of health awareness has been furthered by the establishment of a health resource centre and library serving professionals, schools, volunteer agencies and the public; this institution is funded by the NWT Department of Health and Health and Welfare Canada.

Hospital and health care insurance in both Yukon and the NWT are the responsibility of the territorial departments of health. The NWT Department of Health administers the Territorial Hospital Insurance Services and the Health Care Plan, which provide hospital and medical care to registered residents.

Yukon Hospital Insurance Services and the Yukon Health Care Insurance Plan are the responsibility of the Health Services Branch of the Yukon Department of Health and Human Resources. These plans provide insured services to residents, without geographic restriction. Medically necessary transportation expenses are paid for residents of Yukon from the point of referral to appropriate treatment centres in Yukon, Vancouver or Edmonton. Supplementary benefits are also available for cancer and psychiatric patients, and a Pharmacare program for senior citizens has been introduced.

12.6 Social Services

12.6.1 Responsibilities

In general, social services are the responsibility of the territorial governments to the same extent as in the provinces. Funds are provided by the federal government under the Canada Assistance Plan to cover 50 per cent of the costs of public assistance and welfare services expenditures.

The federal government also funds Family Allowances and Old Age Security, and operates the contributory Canada Pension Plan.

In the NWT, the Government of the Northwest Territories (GNWT) Department of Social Services operates a number of programs which place emphasis on community involvement. The NWT Alcohol and Drug Coordinating Council provides funds for projects proposed by the communities, operates training sessions and regional conferences and provides in-service training for social service workers. The department continues to seek alternatives to incarceration of offenders, using such methods as probation and community service orders. The regional government also has responsibility for child welfare, financial assistance to the needy and services to the aged and handicapped.

In Yukon, social services are the responsibility of the Department of Health and Human Resources. The programs provided by the department include the following:

Services for children and families

A number of services for children are delivered by the Community and Family Services Branch, as opposed to the Community and Family Services Division. Services for children in care are delivered by the Placement and Support Services Unit, as opposed to the Placement and Support Services Division.

Financial assistance is available through the Day Care Subsidy Program to working parents whose incomes fall within the lower end of the salary spectrum.

Youth services are provided to young offenders before the courts or on probation by the Youth Services Unit.

Services for seniors

Pioneer Utility Grant: an annual grant of $360 is available to Yukon seniors who live in their own homes, owned or rented, without government subsidy.

Counselling and community services: a wide range of personal and financial counselling services is offered, as well as information about the range of both Yukon and federal government programs available to seniors.

Encouragement and support are provided in the development of community senior citizens' programs such as the Klondike Senior Citizens Association in Dawson, the Golden Age Society in Whitehorse and the Seniors Information Centre in Whitehorse which is operated by the Yukon Council on Aging.

Transportation services

The department also cooperates with the Whitehorse Transit System in offering a specialized dial-a-ride transportation system within Whitehorse for senior citizens and the disabled who may have difficulty using the regular transit system.

Alcohol and drug services

Yukon Alcohol and Drug Services Division manages and coordinates programs for the prevention and treatment of alcohol and drug problems.

Treatment programs include out-patient counselling, group therapy, assessments, referrals, follow-up and consultation for all Yukoners. Prevention programs focus on public awareness campaigns regarding the use and abuse of alcohol and other drugs.

Rural services programs involve community workers in education and awareness campaigns, training, consultation and community development, counselling and referrals for Yukoners of all ages.

The Employee Assistance Program assists employers in dealing effectively with an employee who has a problem with alcohol or drugs through the development of policies and training seminars, and suggests effective methods of confidential referrals to alcohol and drug counsellors.

Vocational rehabilitation services

Services include comprehensive assessments plus social, medical and vocational counselling, medical rehabilitation, prosthetic and orthotic services, training allowances, tuition and supplies, transportation and on-the-job training arrangements.

Community Preventive Services are directed toward meeting community service needs in all service areas through the Community and Family Services Branch working cooperatively with communities, agencies, organizations and individuals.

Field Services provides community and family services and services to seniors throughout rural Yukon communities.

12.6.2 Social Service Facilities

Both territorial governments operate a broad range of receiving and group homes and offer accommodation to senior citizens. In Yukon, there are four child welfare group homes and a receiving home in Whitehorse and a combined group home/ receiving home in Watson Lake. In addition, there are two youth service facilities in Whitehorse serving delinquents and troubled adolescents.

In the NWT, there are four children's receiving homes; group homes provide continuing care in Yellowknife, Inuvik, Fort Smith, Hay River and Cambridge Bay. There are Senior Citizen homes in Yellowknife, Hay River, Fort Providence and Aklavik. A detoxification centre in Yellowknife provides rehabilitation assistance to those suffering from alcohol or drug addiction.

In Yukon, day care centres and family day homes are available. Licensed centres or day homes meeting established standards for health and medical, nutrition, safety and program activities and physical condition are subsidized under the Day Care Subsidy Program.

There are two senior citizens' lodges. The Norman Macaulay Lodge in Whitehorse, with a 50-bed capacity, provides care ranging from fully supervised personal care to accommodation for the self-sufficient; meal service and limited day care are also available. The Alexander McDonald Lodge in Dawson offers all these services except fully supervised personal care.

The Alcohol and Drug Services program operates a detoxification centre in Whitehorse and funds a privately operated residential treatment centre.

Funds are provided to the Yukon Family Services Association for family counselling and education programs, to the Child Development Centre, which provides services to children with special learning disabilities, to the Rehabilitation Centre, to the Yukon Women's Transition Home, and to the Crossroads Alcohol Treatment Centre.

12.0 Socio-Economic Infrastructure

12.1 General

This is a time of transition in Canada's North. Traditional lifestyles are giving way as competing uses for land and activities foreign to the region make their maintenance difficult, while the possibility of participation in the wage economy provides an alternative for some of those affected.

12.2 Associations and Organizations

12.2.1 General

Associations and organizations in Yukon and the Northwest Territories, as elsewhere, range from the purely social and completely informal to structural entities with distinct ties to the political, governmental or economic fabric. This section will deal only with those having a more or less formal nature and in particular with those which are registered under the Societies Ordinances of the NWT or Yukon.

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If the number of companies having only the proprietor employee were added, the preponderance of small organizations would be still greater. A high percentage of small businesses is not in itself unusual; however, the almost complete absence of any locally registered companies of significant size is much less common in Canada as a whole.

12.3.2 NWT Businesses

Co-operatives started to operate in the Canadian North in 1959 and, in contrast to Yukon, are an important factor in the NWT. There are 38 active NWT co-operatives distributed throughout the territory, with a combined annual sales volume of around $23 million. A federation of arctic co-operatives was formed in 1972 to further the development of local organizations. Now called Arctic Co-operatives Ltd., it operates retail outlets for members' craft products in Yellowknife, Whitehorse, Edmonton, Inuvik and Churhill, a wholesale arts and crafts showroom in Ottawa, and provides education, training, accounting, purchasing and other development services to its owner-member co-operatives.

Most co-operatives operate retail stores serving as general stores in their communities; they also operate specialized services, such as hotels, outfitting and guiding services, various municipal services and craft workshops.

It is estimated that over 350 northerners are directly employed by the northern co-operatives, with almost 2000 others obtaining indirect employment through sale of their produce through local co-ops.

Moreover, it has generally been acknowledged that co-operatives have served as an important training ground for northern people, as they were locally autonomous bodies long before local self-government in the municipal field was introduced to the arctic regions. Thus, co-op boards of directors and management structures set up in the communities, with budget-setting responsibilities and annual elections, helped familiarize many northerners with these business functions. As a result, many other small businesses which have opened in the North have benefited from employing people who have learned management and marketing skills from co-operative employment.

As of 1984, there were 3158 companies registered in the NWT, of which 1200 were incorporated in the territories. In terms of number of establishments, small businesses predominate. Table 12-4 shows the number of employees by industry group in the NWT.

A new business form now active in the territories is the development corporation. Native-owned development corporations range from the community/band operated Rae Edzo Development Corporation to the four regional organizations — the Inuit Development Corporation (now renamed Nunasi) in the eastern Arctic, the Inuvialuit Development Corporation in the northwestern Arctic, the Metis Development Corporation in the Mackenzie Valley and the Dene Development Corporation in the western Arctic. These corporations provide managerial and financial assistance to operating divisions active in many diverse fields. These include the owning and managing of real estate, operation of taxis and hotels and labour contracting and brokerage in the construction industry. There are also non-native development corporations operating in the NWT such as the Hay River and Area Economic Development Corporation, owned by a group of businessmen and active in shipping and the general community re-supply fields.

12.4 Business Regulation and Taxes

12.4.1 Licences and Regulations

In the Northwest Territories, business licences are the responsibility of municipal (including hamlet) councils under the authority provided by the Municipal Ordinance.

In unorganized areas, the Government of the Northwest Territories (GNWT) retains the licensing function under the provisions of the Business Licence Ordinance.

These provisions apply to essentially all business except direct sellers (i.e. door-to-door vendors), who are controlled by the GNWT under the Consumer's Protection Ordinance, and hunting and trapping. Entry into hunting and trapping is dealt with under Fur Export and the Game Ordinances and is administered by territorial wildlife officials.

Native residents of the NWT have traditional hunting and trapping rights for family use, but for commercial activities they require a General Hunting Licence. This does not cover the taking of muskox or polar bear, both of which are controlled through the local Hunters and Trappers associations.

Non-native residents may apply for a licence after two years' residence in the NWT.

The situation in Yukon is somewhat different. All businesses except mining exploration and development, oil and gas exploration and development, and newspaper publishing require licensing under the Business Licence Act by the Government of Yukon; other exceptions are businesses in Whitehorse, Faro, Watson Lake or Dawson City, where licences are granted by the municipality under the authority of the Municipal Act.

Mineral exploration and development are governed by the *Canada Mining Regulations* promulgated under the *Public Lands Grants Act*, the *Territorial Lands Act* and the *Oil and Gas Production and Conservation Act*.

Newspaper publishing is dealt with under the Newspaper Ordinance.

12.4.2 Taxes — Personal, Land, Business

With a minor exception concerning business tax, the taxation situation is the same in Yukon as in the NWT. Both territories levy income and corporate taxes which are collected as in the provinces by the federal government acting on behalf of the territories.

There is authority for the imposition of sales tax, but none is levied at present except on the sale of motor fuel, liquor and tobacco.

Property taxes are levied by the territorial governments or the larger municipalities, but in both cases are collected by the territorial governments.

There is no business tax as such in Yukon, although an annual licence fee produces some revenue. In the NWT, municipalities have the power to collect business taxes and do so, while the territorial government retains the taxing authority in the unorganized areas.

Neither territorial government collects any tax or royalty on the exploitation of minerals or other natural resources, which are owned by the federal government.

12.5 Health Facilities

In both the Northwest Territories and Yukon, responsibility for general health care and public health programs is shared by the federal and the territorial governments.

12.5.1 Institutions, Location, Size, Services

In the NWT, there are seven hospitals, three of which are operated by the Medical Services Branch of Health and Welfare Canada — the Inuvik General (55 beds) and cottage hospitals at Fort Simpson (12 beds) and Rae Edzo (12 beds). In addition, the Medical Services Branch operates: 39 nursing stations, which are equipped and staffed to handle emergencies, short-term treatment and preventive health programs; eight health centres; and 12 health stations, dispensaries operated by local community health representatives and having scheduled visits by nurses. These institutions are staffed by approximately 194 federally employed nurses.

The NWT Department of Health operates four hospitals, including the Frobisher Bay Hospital. Stanton Yellowknife Hospital (72 beds) provides a wide range of in- and out-patient services. It functions as a laboratory for other territorial hospitals and nursing stations, and has on staff specialists in many areas including obstetrics and gynecology, pediatrics, psychiatry and opthalmology; in cooperation with the Elks Lodge it has developed an audiology department with a deafness detection program and training for technicians. The H.H. Williams Memorial Hospital in Hay River is a 50-bed hospital providing acute and chronic care, emergency out-patient services, public and environmental health programs, social services and a home care program. The Fort Smith Health Centre (25 beds) has offices for visiting specialists who come from Stanton Yellowknife Hospital on a regular basis; it also offers out-patient and emergency services, extended chronic care and community home care.

Yukon's five hospitals are located in Whitehorse, Mayo, Faro, Watson Lake and Dawson City. There is also a nursing station at Old Crow. All facilities combined have a total of 159 beds and 42 cribs. In addition, there are health stations at Beaver Creek, Burwash Landing, Carcross and Upper Liard, as well as health centres (staffed by public health nurses) at Destruction Bay, Haines Junction, Whitehorse, Teslin, Watson Lake, Ross River, Faro, Carmacks, Pelly Crossing and Mayo.

As in the NWT, existing services are augmented by visiting specialists in such fields as internal medicine, pediatrics, otolaryngology, dermatology, oncology, ophthalmology and orthopedics. Clinics are held several times a year in Whitehorse by specialists from outside Yukon.

12.5.2 Health Programs, Insurance, Scope, Impact

In both the NWT and Yukon, the Medical Services Branch of Health and Welfare Canada provides and administers major programs in public health, including child and maternal care, family planning, tuberculosis control, infectious and chronic disease control, school health (including dental), environmental and occupational health and health education. A federally operated dental therapy school at Fort Smith trains therapists from both territories for work in outlying communities; dental service is provided by private practitioners in the largest communities, and by government dentists and therapists elsewhere.

As a result of expanded medical services and health education in both the NWT and Yukon, there has been a steady decline in the incidence of TB, measles and infant mortality. In an effort to increase the health awareness of native people, the Medical Services Branch has a health officer appointed to the Council for Yukon Indians, while in the NWT it is helping native northerners prepare for employment with the branch. The promotion of health awareness has been furthered by the establishment of a health resource centre and library serving professionals, schools, volunteer agencies and the public; this institution is funded by the NWT Department of Health and Health and Welfare Canada.

Hospital and health care insurance in both Yukon and the NWT are the responsibility of the territorial departments of health. The NWT Department of Health administers the Territorial Hospital Insurance Services and the Health Care Plan, which provide hospital and medical care to registered residents.

Yukon Hospital Insurance Services and the Yukon Health Care Insurance Plan are the responsibility of the Health Services Branch of the Yukon Department of Health and Human Resources. These plans provide insured services to residents, without geographic restriction. Medically necessary transportation expenses are paid for residents of Yukon from the point of referral to appropriate treatment centres in Yukon, Vancouver or Edmonton. Supplementary benefits are also available for cancer and psychiatric patients, and a Pharmacare program for senior citizens has been introduced.

12.6 Social Services

12.6.1 Responsibilities

In general, social services are the responsibility of the territorial governments to the same extent as in the provinces. Funds are provided by the federal government under the Canada Assistance Plan to cover 50 per cent of the costs of public assistance and welfare services expenditures.

The federal government also funds Family Allowances and Old Age Security, and operates the contributory Canada Pension Plan.

In the NWT, the Government of the Northwest Territories (GNWT) Department of Social Services operates a number of programs which place emphasis on community involvement. The NWT Alcohol and Drug Coordinating Council provides funds for projects proposed by the communities, operates training sessions and regional conferences and provides in-service training for social service workers. The department continues to seek alternatives to incarceration of offenders, using such methods as probation and community service orders. The regional government also has responsibility for child welfare, financial assistance to the needy and services to the aged and handicapped.

In Yukon, social services are the responsibility of the Department of Health and Human Resources. The programs provided by the department include the following:

Services for children and families

A number of services for children are delivered by the Community and Family Services Branch, as opposed to the Community and Family Services Division. Services for children in care are delivered by the Placement and Support Services Unit, as opposed to the Placement and Support Services Division.

Financial assistance is available through the Day Care Subsidy Program to working parents whose incomes fall within the lower end of the salary spectrum.

Youth services are provided to young offenders before the courts or on probation by the Youth Services Unit.

Services for seniors

Pioneer Utility Grant: an annual grant of $360 is available to Yukon seniors who live in their own homes, owned or rented, without government subsidy.

Counselling and community services: a wide range of personal and financial counselling services is offered, as well as information about the range of both Yukon and federal government programs available to seniors.

Encouragement and support are provided in the development of community senior citizens' programs such as the Klondike Senior Citizens Association in Dawson, the Golden Age Society in Whitehorse and the Seniors Information Centre in Whitehorse which is operated by the Yukon Council on Aging.

Transportation services

The department also cooperates with the Whitehorse Transit System in offering a specialized dial-a-ride transportation system within Whitehorse for senior citizens and the disabled who may have difficulty using the regular transit system.

Alcohol and drug services

Yukon Alcohol and Drug Services Division manages and coordinates programs for the prevention and treatment of alcohol and drug problems.

Treatment programs include out-patient counselling, group therapy, assessments, referrals, follow-up and consultation for all Yukoners. Prevention programs focus on public awareness campaigns regarding the use and abuse of alcohol and other drugs.

Rural services programs involve community workers in education and awareness campaigns, training, consultation and community development, counselling and referrals for Yukoners of all ages.

The Employee Assistance Program assists employers in dealing effectively with an employee who has a problem with alcohol or drugs through the development of policies and training seminars, and suggests effective methods of confidential referrals to alcohol and drug counsellors.

Vocational rehabilitation services

Services include comprehensive assessments plus social, medical and vocational counselling, medical rehabilitation, prosthetic and orthotic services, training allowances, tuition and supplies, transportation and on-the-job training arrangements.

Community Preventive Services are directed toward meeting community service needs in all service areas through the Community and Family Services Branch working cooperatively with communities, agencies, organizations and individuals.

Field Services provides community and family services and services to seniors throughout rural Yukon communities.

12.6.2 Social Service Facilities

Both territorial governments operate a broad range of receiving and group homes and offer accommodation to senior citizens. In Yukon, there are four child welfare group homes and a receiving home in Whitehorse and a combined group home/ receiving home in Watson Lake. In addition, there are two youth service facilities in Whitehorse serving delinquents and troubled adolescents.

In the NWT, there are four children's receiving homes; group homes provide continuing care in Yellowknife, Inuvik, Fort Smith, Hay River and Cambridge Bay. There are Senior Citizen homes in Yellowknife, Hay River, Fort Providence and Aklavik. A detoxification centre in Yellowknife provides rehabilitation assistance to those suffering from alcohol or drug addiction.

In Yukon, day care centres and family day homes are available. Licensed centres or day homes meeting established standards for health and medical, nutrition, safety and program activities and physical condition are subsidized under the Day Care Subsidy Program.

There are two senior citizens' lodges. The Norman Macaulay Lodge in Whitehorse, with a 50-bed capacity, provides care ranging from fully supervised personal care to accommodation for the self-sufficient; meal service and limited day care are also available. The Alexander McDonald Lodge in Dawson offers all these services except fully supervised personal care.

The Alcohol and Drug Services program operates a detoxification centre in Whitehorse and funds a privately operated residential treatment centre.

Funds are provided to the Yukon Family Services Association for family counselling and education programs, to the Child Development Centre, which provides services to children with special learning disabilities, to the Rehabilitation Centre, to the Yukon Women's Transition Home, and to the Crossroads Alcohol Treatment Centre.

12.6.3 Problems

Overindulgence in and abuse of alcohol is, if not the most serious problem in the North, certainly the most obvious manifestation of social difficulties.

One of the ways in which the communities are responding is at the local option level. In the NWT, numerous communities have decided to prohibit the importation of alcohol. Others act by controlling each importation, and permit or refuse depending upon the performance record of the individual seeking to import. The new Liquor Ordinance in the NWT increased the allowable size of the liquor licensing board from five members to nine members, in order to permit more regional representation. The board also will become subject to policy guidelines issued from time to time by the Executive Committee.

The ordinance provides for a continuation of the "local option" system in the NWT and gives a statutory base to other systems of liquor control which have been adopted by communities throughout the Territories. Such systems include an unrestricted system, restricted hours for licenced premises, restricted quantities, a committee sytem in which a locally-elected alcohol education committee decides who can buy liquor, and prohibition.

The new ordinance allows inspectors to suspend liquor licences for up to 48 hours pending a board hearing, provides more protection for licencees and gives the board power to levy a fine of up to $5,000 and suspend a licence until the fine is paid.

In order to discourage impulse purchases of liquor, restrictions were placed on off-premises beer sales and provisions were included which could delay delivery of liquor orders for up to 24 hours after the order was placed.

Unemployment may be the basic problem which underlies much of the overuse of alcohol, and is more serious in the larger centres. In smaller communities, activities such as the hauling of water and collection of wastes are labour-intensive and these, together with hunting and trapping, reduce idleness even if they do not contribute to the community's cash income.

What was formerly a serious social problem — the lack of leadership following the bringing together of small family groups into larger settlements — has been overcome as new leadership skills have been acquired. It is possible that present difficulties will diminish as the social structure continues to evolve.

12.7 Educational Facilities

12.7.1 Schools — Location, Grades, Enrolment

The range of educational opportunities in both Yukon and the Northwest Territories is constantly being broadened. All but the very smallest communities now have schools for at least the lower grades, and grade levels are being raised as rapidly as possible to reduce the number of students who must leave home for schooling.

The development of Northwest Territories high school programs was a major priority during the past year. In March, the Minister of Education authorized the issuing of a Northwest Territories high school graduation certificate. This certificate will be granted to NWT students who meet NWT graduation requirements.

Grade 12 students will be required to write Alberta provincial high school diploma examinations beginning in the 1983-84 school year. Because NWT high schools follow the Alberta program of studies and credits are awarded by the province, territorial students must write the examinations to qualify for an Alberta diploma.

In Yukon, there are 26 schools, one in every community. Total enrolment in these schools (Kindergarten to Grade 12) was 4552 in September, 1983. The total number of teachers was 309.

Yukon College is the only post-secondary institution in Yukon. As a community college, Yukon College offers programming varying from adult academic upgrading through trades and technical courses to multi-year programming in business administration and university transfer. Program delivery varies from part-time to full-time and from centrally delivered to mobile instruction. Learning centres are located in several rural communities and offer courses on a part-time and full-time basis. Approximately 1,750 students are involved on either a part-time or full-time basis.

12.7.2 Programs

At present the major emphasis is on the development of a northern curriculum and the use of the native northern languages in teaching.

In many schools in the NWT teaching in the first three grades is in Inuktitut, and textbooks have also been prepared in some of the Dene languages. An important aspect of this "northernization" has been the development of native northern teachers through teacher education programs at Frobisher Bay and the Fort Smith Annex. Core programming has been completed in English, mathematics, science and social studies for Grades 1 to 9, as well as for adult education at the basic and intermediate levels. Testing methods and exercises for special and remedial education are also being developed.

There were dramatic increases in the number of students enrolled in the Eastern Arctic teacher education program. Over 100 people are being trained in either the field-based program or on campus in Frobisher Bay with generous assistance from Donner Foundation of Canada. It is predicted that in four years 50 per cent of the teaching force in the Eastern Arctic will be made up of Inuit teachers.

Post-secondary education at institutions in the south is made available to high school graduates through financial assistance. Indian and Northern Affairs Canada (INAC) maintains counselling units for native northerners attending southern schools.

In Yukon, native language, culture and life skills, such as trapping, are taught in several schools. A native language instructor course at Yukon College supports the further development of the native language courses. Whitehorse students also have access to a French Immersion program from kindergarten through to grade 12 on a continuous progress basis.

Yukon students may also apply for financial assistance to continue with their education in post-secondary institutions. This assistance is available in the form of Yukon grants or a certificate of eligibility for a Canada student loan. About 350 students receive a Yukon post-secondary education grant and approximately 200 students are certified as eligible for a Canada student loan annually.

12.7.3 Vocational Training

In the NWT, the Adult Vocational Training Centre (AVT) at Fort Smith offers academic upgrading (Grades 7 to 12) and a wide variety of vocational and apprenticeship courses, including: heavy equipment operation; motor mechanics; heavy duty mechanics; driver training; electronics and telecommunications; housing maintenance; carpentry; millwright/machinist; food services; small business management; and community service worker. Many of these programs are available through extension courses.

A nursing assistant program is offered in both Inuvik and Yellowknife and a school of dental therapy is operated at the Fort Smith AVT Centre by Health and Welfare Canada; this is the only such training available in the North and is attended by students from both the NWT and Yukon.

In Yukon, adult and vocational training programs in the areas of pre-employment, apprenticeship industrical, academic upgrading and university transfer are available at Yukon College in Whitehorse and through community learning centres in various outlying areas. A mobile training unit offered a small engines course in three communities on a rotating basis throughout Yukon.

The apprenticeship and industrial unit, part of the advanced education and manpower branch, administers the upgrading and training of apprentices. 71 journeymen received certification through the tradesmen's qualification route and 21 apprentices earned journeymen certification upon completion of their apprenticeship programs. Finally, 65 journeymen received an inter-provincial standards red seal during 1983-84.

12.8 Employment and Working Conditions

12.8.1 General

Unfortunately, no distinction as to ethnic group is made in most of the limited statistics on unemployment in the North. However, employment conditions in the income-producing sectors of the northern economy are different for the native and non-native populations. This is due in part to the fact, common to all parts of Canada, that there are relatively few employment opportunities in the North for unskilled workers. More importantly, the native population has a significantly lower level of education and skills; this is related to a number of factors, including cultural differences and difficulty of access to schooling. In addition, there are limited wage-earning opportunities overall.

Outside the larger centres, and most particularly at the level of the smallest of the settlements, there is much less true unemployment because many of the activities inherent in the life and culture of the people are productive and relatively labour-intensive. However, as the persons employed in these activities do not participate directly in the wage economy, in some analyses they are not considered as being in the labour force. The treatment in this section relates principally to the wage economy of the North. For the role which hunting and trapping play outside this sphere, see Sections 3.6, 3.7 and 7.3.

Table 12-5 shows the estimated size of the population and the labour force in Yukon and the NWT as of 1983.

12.8.2 Current Employment and Prospects

As in the rest of Canada, employment in Yukon and the NWT fluctuates from year to year and season to season. With some reservation regarding the strict compatibility of the figures, the most recent data from Yukon (Dec. 1983) show unemployment somewhat above the national average and considerably higher (13.6 per cent versus 11.7 per cent) than for June of the same year. The NWT does not publish figures, but the manpower development division provides a focal point for employment, industrial training, apprenticeship, career development and related support programs for Northerners in business and industry.

Under a training-on-the-job employment program, the Territorial Government, the trainee and the employer contract for practical employment and skill training.

Emphasis has been placed on employment opportunities in the oil industry, where approximately 1,000 northerners were employed as of September 1983.

The short term employment program (S.T.E.P.) is the Territorial Government's job creation program, aimed at areas with limited wage employment opportunities. Under the supervision of the regions, this program resulted in expenditures of $2 million in the NWT economy at the community level.

It is probable that the percentage of unemployment among the native population is very much greater than for the non-native, and that a further imbalance between male and female workers exists.

Although unemployment was a higher percentage of the labour force in Yukon in 1983 than in 1982, there were fewer employed people in June 1983 (10,565) than there had been a year earlier (11,809) because the labour force in 1983 was lower (12,228) than in the previous year (13,315 in 1982).

Employment increases over the previous year (June 1982 — June 1983) were noted in forestry (14.3%), the service sector (5.4%), and construction (32.2%). There were declines in mining, transport, communications/public utilities and government.

The impact of mining on the economy of Yukon was the subject of a study by the Economics Planning and Research Unit of the Yukon Territorial Government (YTG). This showed that mining accounted for 15.7 per cent of total employment in 1978, down from 16.7 per cent a year earlier.

Major mines then operating, with a total employment estimated at 992, were the Cyprus Anvil Mining Corp. at Faro, United Keno Hill Mines Ltd. at Keno Hill and Whitehorse Copper Mines Ltd. at Whitehorse. The drop in the percentage of employment in mining in 1978 was the result of the closing of the Clinton Creek Mine. In addition to these relatively large operations there were a number of smaller companies operating which brought the total employment in the mining sector to 1126.

Employment in this sector had increased as of June 1981 to 1616, but widespread layoffs in the industry have brought about a substantial decline in numbers employed (down 41.5% in December 1983 from December 1982).

Labour statistics available from the NWT are not in quite the same form as for Yukon. Table 12-7 shows the distribution by employment classification based on analysis of 1982 income tax returns, and Table 12-8 shows some changes in government employment between 1983 and 1984.

12.8.3 Wages, Salaries and Allowances

The average annual income for all employees was $15,580 in Yukon and $13,101 in the NWT versus $12,993 for Canada as a whole.

Figures from Statistics Canada (Catalogue 72-002) show that the ratio has probably increased if anything, as indicated in Table 12-9.

These figures give a misleading impression of high wages in both territories. While some wage rates do reflect the higher costs of living, the data in the table are from firms employing 20 or more persons. Thus, smaller enterprises are not represented and these constitute a much larger fraction of the total in the North than elsewhere in Canada.

12.8.4 Labour Legislation

The Canadian Labour Code applies to Yukon and the NWT. In addition, corresponding to provincial labour legislation elsewhere in Canada, there are applicable territorial ordinances. Four of these are summarized very briefly below; other ordinances with some labour content are tabulated in Table 12-10 by chapter number and short title from the Revised Ordinances of the Northwest Territories and Revised Ordinances of Yukon.

12.8.4.1 Labour Standards Ordinance 1967 (NWT)

This is an ordinance to provide for labour standards in the NWT. It specifies hours of work, minimum wages, annual vacations and other holidays, and provides for the issuance of regulations to carry out the provisions of the ordinance.

12.8.4.2 Fair Practices Ordinance 1966 (NWT)

This is an ordinance to prevent discrimination in regard to accommodation and employment and in regard to membership in trade unions by reason of race, creed, colour, sex, marital status, nationality, ancestry, place of origin, handicap, age, family or conviction for which pardon has been granted.

It specifically enjoins against discrimination in employment or accommodation on any of the grounds listed, requires equal pay for males and females for substantially similar work and establishes a procedure for hearing and rendering decisions with respect to complaints of unfair practices.

Of particular interest, considering the large native population in the NWT, is the provision in the ordinance for affirmative action programs.

12.8.4.3 Labour Standards Ordinance 1968 (Yukon)

This ordinance is similar in content and scope to that summarized above for the NWT.

12.8.4.4 Fair Practices Ordinance 1963 (Yukon)

This ordinance is similar in scope and content to that summarized above for the NWT.

12.8.4.5 Other Ordinances Having Some Implications for Labour

12.9 Consumer Goods and Services

Since few consumer goods are produced within the territories, these goods must be imported, and the remoteness of the northern settlements from the sources of supply ensures that living costs in the North will be greater than living costs in southern Canadian communities. As an approximation, these costs will be greater by an amount equivalent to the additional transportation and inventory costs.

Northern food costs are estimated as being about 20 per cent greater than those at southern supply points. The differential is even greater for the smaller, more remote northern settlements. It should be noted that these greater costs are experienced by those in the northern wage economy and have less impact on those persons — primarily native — who follow the traditional hunting and trapping way of life.

It is difficult, then, to make meaningful comparisons between the costs of living in northern and southern communities and such measurements are possibly of less importance than that given them by northern residents.

12.9.1 Food

Food prices are generally higher in Yukon and the Northwest Territories than in the provinces. Food price differentials in Yukon were studied intensively in 1981, and it is from the report on this study[1] that much of the following information is taken.

The study found that Whitehorse food prices were about 18 per cent above those in Vancouver and about 22 per cent above those in Edmonton in June 1981. The 1983 figures are 21.4 per cent and 28.3 per cent respectively. Freight and inventory costs were the principal contributing factors to the higher prices. No satisfactory explanation could be given for the small residual difference in prices. The study also found that, unless care was taken in defining the items to be priced and the relative weights to be given to each, the data could be subject to different interpretations.

The differences between costs of several food items in Whitehorse, Edmonton and Vancouver are expressed in the form of indices in Table 12-11; like items were priced at each location and the same relative weights were used.

Table 12-12 measures the extent by which the prices of different food items available for purchase in six Yukon communities exceed the prices paid for the same set of items in Whitehorse.

Food prices in the NWT are also higher than those found in the rest of Canada. The *Statistics Quarterly* published by the Government of the Northwest Territories (GNWT) is the source of the data for Table 12-13.

Similar figures for the more remote communities of the NWT and Yukon are not available.

12.9.2 Clothing, Furniture — Household Goods and Services

Due to the limited and widely distributed population in the north, no retail establishment, even in Whitehorse, Yellowknife or the other relatively large population centres, can afford to carry a very wide selection of durable consumer goods such as furniture and appliances. This is not an exclusively northern phenomenon; in small towns in southern Canada the same observation could be made. To stock a range of durable goods which are purchased intermittently, there has to be a larger population.

The major difference that sets Yukon and the NWT apart is that the closest major shopping centre is many hundreds of kilometres away, instead of being within 200 kilometres or so; thus the cost of getting to one is generally prohibitive.

Goods ordered during trips outside or by mail must of course be shipped, with the attendant delay and inevitable increase in cost. While the lack of selection and the delay cannot be readily reduced to numbers, the relative landed costs of goods and services can be, and are shown in Tables 12-14 and 12-15.

At the same time, in major northern centres where there is a high level of disposable cash income there is probably the same range of selection of articles of everyday purchase — such as food, tobacco and clothing — as can be found in southern Canadian communities of comparable size.

12.9.3 Energy Prices

Some considerations concerning the supply of electricity and petroleum products will be found in Section 12.10; this section will be concerned with price only.

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[1] Report of the Special Committee on Food Prices, Legislative Assembly Office, Whitehorse, December 1981. New figures are from Yukon's June 1983 Spatial Price Survey, Economic Development

12.9.3.1 *Electricity*

Prices in Table 12-16 are as supplied by the Northern Canada Power Commission (NCPC). Prices are not shown for Enterprise, Fort Providence, Hay River or Yellowknife, NWT where residents buy from Alberta Power and Plains Western. For the Yukon centres for which prices are not shown, rates can be obtained from Yukon Electrical Company Limited, Whitehorse.

12.9.3.2 *Petroleum Products*

A large number of NWT communities are not serviced by private sector distributors of petroleum products. In these communities the GNWT, through its Petroleum Oil and Lubricants Division, acquires, transports, stores and distributes petroleum products. Not all of the costs associated with this service are recovered from the sales of these products; thus an indirect subsidy is provided to such northern communities.

12.9.3.3 *Hot Water and Steam*

District heat as hot water is available from the Frobisher electrical generating plant. Prices vary from year to year.

12.10 Utilities

12.10.1 General

The utilities taken for granted in southern Canada are not universally available north of 60°N. Although almost every community is supplied with electrical power, only a few have running water and sewage disposal systems.

Where they are available the cost of providing these utility services is very high, reflecting the northern environment and conditions, although these are rarely paid directly by the end user. Some typical prices are shown in Table 12-16 of Section 12.9 and these may be compared with the wholesale prices, which presumably reflect actual costs, shown in Table 12-18.

12.10.2 Electricity

A study[1] of communities of 20 or more persons in both Yukon and the NWT in 1980 showed that only six of them, two in Yukon and four in the NWT, were without electricity. Most of these (10 in Yukon and 50 in the NWT) are dependent on diesel generators, while seven in the NWT and eight in Yukon are serviced by hydro-generated electric power. The principal supplier of electrical energy in the North is the Northern Canada Power Commission (NCPC). It generates power at five hydroelectric and 46 diesel electric plants.

In addition to NCPC, Yukon Electrical Company Ltd. generates a small amount of hydro power at two sites (1.0 MW and .65 MW) close to Whitehorse, and Cominco owns and operates a somewhat larger (3.3 MW) site at Bluefish Lake near Yellowknife, which provides power for its mining operations. There is a diesel electric plant owned and operated by the mine at Nanisivik, which distributes power to the townsite, and a similar situation exists at Port Radium. At Sanikiluaq in the Belcher Islands, a generator owned by the territorial government, and in Bathurst Inlet, privately owned equipment, are the only sources of electricity.

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[1] Renewable Energy in Remote Locations;
Energy Demand and Resource Base, Report ER 80-10E
Energy, Mines and Resources Canada, October 1980

In Yukon, most consumers receive electrical energy from Yukon Electrical Co., except those in Dawson City, Elsa, Faro and Mayo, where NCPC provides retail service. The situation is different in the NWT, where the retail distribution is almost entirely by NCPC; exceptions are Yellowknife, where Plains Western Gas and Electric Co. is the retailer, and Enterprise, Fort Providence, Dory Point and Hay River, where generation and distribution is done by Alberta Power Ltd. from its diesel generator. The retail prices of electricity listed in Table 12-16 do not necessarily reflect the total cost of providing electrical energy. The most recent figures available for the energy charges by NCPC to the GNWT at some of the locations for which retail prices were quoted are given in Table 12-18.

12.10.3 Other Utilities

While electricity is generally available, other services are not. In the NWT, a very complete listing of all community facilities in 60 locations has been produced[1]. This shows that only 18 or so have water piped to any building and in only about seven of these is piped water available to the community generally.

In Yukon, six communities — Dawson City, Faro, Haines Junction, Mayo, Watson Lake and Whitehorse — have running water and sewer connections. Carmacks has sewer only, with residents dependent upon their own wells for water; Teslin uses sewage holding tanks with pump-out service.

Sewage systems are rare, due to the difficulty of keeping sewers from freezing. In some communities a utilidor system, which encloses and insulates both water supply and sewage lines, is used; in a few others the lines are buried. Burial is advantageous in only those locations where there is no permafrost.

Except for those few locations (seven in Yukon, 13 in the NWT) with piped sewage disposal, sewage is held in a holding tank or, more generally, in plastic bags. Only rarely can septic tank disposal be used.

Removal of garbage is easily added to the collection of sewage when the latter is bagged. If a more sophisticated sewage system is in place the addition of garbage collection appears to be a relatively minor item, so that this service is quite generally available.

District heat is provided at a few places from the waste heat that is a by-product of the generation of electricity from diesel plants. At the present time the NCPC operates major heat recovery systems at Dawson City in Yukon and at Cambridge Bay, Igloolik and Rankin Inlet in the NWT. Both the NCPC and potential users would like to see a greater application of the heat recovery principle, but at present the high capital costs constitute a barrier.

12.10.4 Fuel Supplies

With the exception of Norman Wells, gas is difficult to obtain for domestic or industrial use in both Yukon and the NWT, despite the large quantities known to exist there. There is local production of gasoline and oil at the refinery at Norman Wells, and this provides for some of the needs in the Mackenzie Valley, with the remainder coming by truck to Hay River for barge shipment or over the Dempster Highway to the Delta area.

The Pointed Mountain Gas Field in the NWT produces gas for transportation via pipeline to a treatment plant at Fort Nelson, BC, with only a very small quantity being used for the generation of electricity for on-site field operations.

A small-diameter pipeline terminating at Whitehorse delivers petroleum supplies to Yukon from tidewater at Skagway, Alaska.

The eastern Arctic receives the bulk of its fuel and diesel oil needs by tanker, with remote points served by air.

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[1] NWT Data Book, op. cit.

For a very complete summary of the services available to each community in NWT, see: Community Water and Sanitation Services, Northwest Territories, November 1981, Water and Sanitation Section, GNWT

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Table 12-1
Approximate number of establishments listed by industry, group and class accordance with Standard Industrial Classification Manual in Yukon and the NWT, mid-year, 1984

Group	Class	Yukon	NWT
Farms	Farms, including experimental and institutional farms	7	3
Services incidental to agriculture	Services incidental to agriculture	4	1
Logging	Logging	6	1
	Forestry services	1	0
Fishing	Fishing	2	4
Hunting & Trapping	Hunting & Trapping	1	2
Metal mines	Placer gold mines	38	1
	Gold quartz mines	3	4
	Miscellaneous metal mines	3	1
Mineral fuels	Coal mines	1	0
	Crude petroleum and natural gas industry	3	8
Non-metal mines	Gypsum mines	1	0
	Miscellaneous non-metal mines	1	0
Quarries and sand	Stone quarries	0	0
	Sand pits or quarries	1	0
Services incidental to mining	Contract drilling for petroleum	1	3
	Other contract drilling	2	0
	Miscellaneous services incidental to mining	20	7
Food and beverage	Fish products industry	0	4
	Bakery products industry	0	2
	Beverage industry	1	1
Leather industries	Luggage, handbags, small leather goods	0	1
Textile industries	Miscellaneous textile industry	0	1
Clothing industries	Men's clothing industry	0	3
	Women's clothing industry	0	1
	Miscellaneous clothing industry	1	0
Wood industries	Sawmills, planing mills and shingle mills	6	3
	Sash, door and other millwork plants	2	0
	Miscellaneous wood industry	1	0
Furniture and fixture industries	Household furniture manufacturers	1	3
Printing, publishing	Commercial printing	3	6
	Publishing only	0	1
	Publishing and printing	2	2
Metal fabricating industries	Metal stamping, pressing and coating industry	1	0
	Machine shops	1	0
Machinery industries	Miscellaneous machinery and equipment manufacturers	0	1
Transportation equipment industries	Aircraft and aircraft parts manufacturers	0	1
	Boatbuilding and repairs	1	2
Electrical products industries	Communications equipment manufacturers	1	0
	Ready-mix concrete manufacturers	0	2
Chemical and chemical products industries	Manufacturers of industrial chemicals	1	0
	Miscellaneous chemical industries	0	1
Miscellaneous manufacturing industries	Jewellery and silverware industry	2	1
	Sporting goods and toy industries	1	0
	Miscellaneous manufacturing industry n.e.s.	1	1
Construction, general contractors	Building construction	40	54
	Highway, bridge and street construction	12	11
	Other construction	9	8
Special-trade contractors	Special-trade contractors	84	83

Table 12-1 *(Continued)*

Group	Class	Yukon	NWT
Transportation	Air transport	10	29
	Services incidental to air transport	4	8
	Water transport	0	8
	Services incidental to water transport	0	1
	Moving and storage, used goods, uncrated	3	2
	Other truck transport	37	29
	Bus transport, interurban and rural	2	2
	Urban transit systems	1	1
	Taxicab operations	6	18
	Highway and bridge maintenance	7	4
	Miscellaneous services incidental to transport	13	7
	Other transport	3	3
Communication	Radio and television broadcasting	5	8
	Telephone systems	0	1
	Telegraph and cable systems	0	1
Electric power, gas and water utilities	Electric power	2	0
	Water systems	0	1
	Other utilities	1	13
Wholesale trade	Wholesalers of coal and coke	1	0
	Wholesalers of petroleum products	10	8
	Wholesalers of paper and paper products	0	1
	Wholesalers of general merchandise	2	1
	Wholesalers of food	3	5
	Wholesalers of apparel and dry goods	0	1
	Wholesalers of household furniture and furnishings	0	1
	Wholesalers of motor vehicles and accessories	4	1
	Wholesalers of electrical machinery, equipment and supplies	1	1
	Wholesalers of machinery and equipment n.e.s.	8	7
	Wholesalers of lumber and building materials	1	11
	Wholesalers n.e.s.	14	5

Table 12-1 *(Continued)*

Group	Class	Yukon	NWT
Retail trade	Food stores	21	22
	General merchandise stores	10	30
	Tire, battery and accessories stores	5	1
	Gasoline service stations	26	6
	Motor vehicle dealers	5	7
	Motor vehicle repair shops	18	14
	Shoe stores	0	1
	Men's clothing stores	2	3
	Women's clothing stores	4	3
	Clothing and dry goods stores, n.e.s.	2	9
	Hardware stores	2	3
	Household furniture and appliance stores	3	13
	Radio, television and electrical appliance repair shops	3	5
	Drug stores	3	6
	Book and stationery shops	2	5
	Florists' shops	2	3
	Jewellery stores	5	1
	Liquor, wine and beer stores	2	4
	Tobacconists	1	0
	Retail stores, n.e.s.	32	40
Finance industries	Banks and other deposit-accepting establishments	0	0
	Other credit agencies	1	0
	Investment and holding companies	18	15
Insurance carriers	Insurance carriers	1	2
Insurance agencies and real estate industry	Insurance and real estate agencies	11	11
	Real estate operators	22	52

Table 12-1 *(Continued)*

Group	Class	Yukon	NWT
Education and related services	Kindergartens and nursery schools	2	1
	Elementary and secondary schools	2	5
	Vocational centres, trade schools and business colleges	1	4
	Post-secondary non-university educational institutions	0	1
	Libraries, museums and other repositories	9	5
	Education and related services, n.e.s.	1	6
Health and welfare services	Hospitals	5	4
	Offices of physicians and surgeons	13	9
	Offices of para-medical personnel (practitioners)	1	1
	Offices of dentists	5	3
	Diagnostic and therapeutic services n.e.s.	0	3
	Miscellaneous health services	1	3
	Welfare organizations	23	31
Religious organizations	Religious organizations	16	28
Amusement and recreation services	Motion picture theatres	4	2
	Golf clubs and country clubs	0	1
	Bowling alleys and billiard parlours	1	3
	Theatrical and other staged entertainment services	4	1
	Miscellaneous amusement and recreation services	14	19

Table 12-1 *(Continued)*

Group	Class	Yukon	NWT
Services to business management	Employment agencies and personnel suppliers	2	4
	Computer services	3	3
	Security and investigation services	4	5
	Offices of accountants	11	11
	Advertising services	4	2
	Offices of architects	3	1
	Engineering and scientific services	14	12
	Offices of lawyers and notaries	9	9
	Offices of management and business consultants	8	10
	Miscellaneous services to business management	10	18
Personal services	Shoe repair shops	1	0
	Barber and beauty shops	10	10
	Private households	11	33
	Laundries, cleaners and pressers	5	5
	Self-service laundires and dry cleaners	1	3
	Miscellaneous personal services	13	4
Accommodation and food services	Hotels and motels	56	33
	Lodging houses and residential clubs	2	2
	Camping grounds and trailer parks	11	12
	Restaurants, caterers and taverns	41	45
Miscellaneous services	Labour organizations and trade organizations	8	21
	Photographic services, n.e.s.	3	2
	Automobile and truck rental	4	5
	Machinery and equipment rental	3	6
	Blacksmithing and welding shops	8	6
	Miscellaneous repair shops	6	2
	Services to buildings and dwellings	10	36
	Miscellaneous services, n.e.s.	29	94

Table 12-1 *(Continued)*

Group	Class	Yukon	NWT
Federal Administration	Other federal services	0	1
Provincial administration	Provincial administration	52	73
Local administration	Local administration	22	60

n.e.s. not elsewhere specified
Source: Statistics Canada (Cycle 153)

Table 12-2
Number of companies by industry sector in Yukon as of December 1983

Sector	No. of companies*
Communications and Utilities	8
Mining	174
Forestry	23
Construction	187
Service	822
Transportation	88
Total	1302

* Includes establishments excluded from Table 12-1

Table 12-3
Distribution of number of establishments with at at least one employee and registered in Yukon with UIC in 1981

No. of Employees	No. of Establishments
1- 4	478
5- 9	136
10- 19	50
20- 49	26
50- 99	6
100-199	4
200-499	1

Table 12-4
Employees by Industry, Northwest Territories 1983-84

Industry Group	Employees						
	1983						1984
	July(r)	Aug	Sept	Oct	Nov	Dec	Jan(p)
Mines, Quarries, & Oil Wells	3208	3243	3507	3439	2978	2704	2805
Manufacturing	282	345	347	379	385	308	296
Construction	X	X	X	X	X	X	X
Transportation, Communication & Utilities	2107	2070	1986	1875	1652	1552	1550
Trade	1796	1747	1786	1762	1883	1776	1775
Finance, Insurance & Real Estate	619	594	585	561	543	538	527
Community, Business, & Personal Services	4225	4101	4417	4539	4584	4300	4373
Public Administration	4736	4840	4972	4754	4624	4624	4524
Industrial Aggregate	17697	17745	18392	18053	17305	16281	16381

(r) = revised
(p) = preliminary
X = confidential

Source: NWT Labour Market Review April, 1984, Employment and Immigration Canada

Table 12-5
Estimated population and labour force, Yukon and NWT, 1983

Yukon	
Total population	23,378
Potential labour force	11,133
Employed	9,336
Unemployed	1,797
Unemployment rate	16.1%
NWT	
Total population	45,741
Potential labour force	19,180
Employed	17,615
Unemployed	1,565
Unemployment rate	8.2%

Source: Health Care Records (Yukon) and Yukon Labour Force Survey, December 1983; NWT Statistics Quarterly, Vol. 5, No. 3 and Statistics Canada.

1. Population figures are estimates.
2. "Potential labour force" refers to population 15 years of age and over.

Table 12-6
Distribution of labour force in Yukon by industry sector as of December 1983

Mining	538
Forestry	12
Construction	560
Service	2892
Transportation	397
Communication and utilities	380
Government	3449
Other*	—
Total	8,228

* Hunting, fishing, trapping, agriculture and summer students — eliminated from full-time classification in 1982

Source: Yukon Labour Statistics

Table 12-7
Employment and average income by industry sector in NWT, 1982

Employment Classification	Number of Returns	Average Income
All Classifications	25,569	$ 17,740
Employees	20,914	20,287
Business	10,113	19,147
Institutional	1,558	14,555
Teachers	203	27,970
Federal	2,418	25,253
Territorial	3,951	25,747
Municipal	1,312	15,152
Armed Forces	334	27,222
Unclassified	1,025	10,285
Business Proprietors	416	12,853
Investors	440	24,055
Pensioners	391	4,657
Unclassified	3,250	2,072
Other	158	30,468

Source: Statistics Quarterly, Vol. 6, No. 2, June 1984 Northwest Territories

Table 12-8
Changes in government employment from 1983 to 1984 in the NWT

Government Employment

	1984			Year-to-date		
	Mar	Feb	Jan	1984	1983	Change
		($'000)		($'000)		(%)
Payroll	17 712	17 141	16 701	51 554	46 249	11.5
Federal	5 820	5 424	5 353	16 597	14 612	13.6
Territorial	10 369	10 336	9 975	30 680	28 106	9.2
Municipal	1 523	1 381	1 373	4 277	3 531	21.1
		(no)		(monthly avg.)		(%)
Employees	7 103	7 008	6 857	6 989	6 832	2.3
Federal	2 681	2 631	2 614	2 642	2 530	4.4
Territorial	3 585	3 574	3 449	3 536	3 560	-0.7
Municipal	837	803	794	811	741	9.5

(Federal Payroll does not include overtime and retroactive pay.)

Source: Statistics Quarterly, Volume 6, Number 2, June 1984 Northwest Territories

Table 12-9
Average weekly earnings for the industrial composite, Canada, Yukon and the NWT

	Jan 1984	Dec 1983	Jan 1983
Canada	399.75	395.72	405.13
Yukon	471.55	471.67	465.52
NWT	545.75	540.11	560.66

Table 12-10
Listing by short title and chapter of ordinances in Yukon and NWT having some labour content

Territory	Chapter	Territory	Chapter
Yukon	C-5	Northwest	D-2
	D-2	Territories	D-3
	E-4		E-1
	E-5		F-2
	F-2		L-1
	I-1.1		L-3
	L-1		M-10
	L-4		M-13
	M-5.1		O-2
	M-9		R-3
	P-4		S-1
	P-11		T-2
	S.7.1		W-1
	W-1		W-4
	W-5		
	W-6		

Source: Revised Ordinances, NWT, 1974 Revised Ordinances, Yukon, 1975

Table 12-11
Food price comparisons between Whitehorse and both Edmonton and Vancouver in June 1983

	Edmonton =100	Vancouver =100
Food	128.3	121.4
Food for home consumption	125.9	126.4
Meat, poultry, fish	121.1	117.5
Dairy products, eggs	126.7	112.1
Cereal, bakery products	134.6	131.7
Fruit, vegetables	134.6	149.3
Food away from home	133.8	110.0

Source: Yukon Economic Review, June 1983

Table 12-12
Food price comparisons, June 1981, between Whitehorse and other Yukon centres*

	Number of Items Compared	Percentage Difference
Haines Junction	85	13.8
Teslin	141	5.3
Faro	194	9.7
Dawson City	132	17.7
Mayo	120	19.3
Watson Lake	148	7.1

Source: Report of the Special Committee on Food Prices, op. cit.

* Update not available

Table 12-13
Weekly food cost (nutritious diet for a family of four) as of March 1984

	Cost in Dollars
Yellowknife	127.02
Whitehorse	123.33
Southern Canada (average)	93.40
Edmonton	93.38
Vancouver	95.39

Table 12-14
Index of prices for consumer goods and services at Whitehorse, Yukon, relative to Edmonton or Vancouver in 1983

	Whitehorse	
Item	Edmonton=100	Vancouver=100
All items	122.4	116.8
Food:	128.3	121.4
Consumed at home	125.9	126.4
Consumed away from home	133.8	110.0
Housing:	129.0	125.8
Shelter	103.7	111.0
Operation	172.7	162.6
Furnishings	113.7	100.2
Clothing	112.6	110.8
Transportation	116.6	105.3
Private	111.2	101.6
Public	154.1	130.4
Health and personal care	106.5	101.1
Health	104.9	92.6
Personal care	107.5	106.1
Recreation, reading & education	114.9	115.9
Recreation	113.9	114.1
Reading & education	119.4	123.3
Tobacco and alcohol	122.2	111.8
Tobacco	104.1	101.8
Alcohol	128.4	115.2

Source: Spatial Price Survey, June 1983 Economic Research and Planning Unit, Government of Yukon

Table 12-15
Index of prices for consumer goods and services at Yellowknife, NWT, relative to Edmonton in 1983

	Index Edmonton=100
All items	130.2
Food	125.1
Housing	154.4
Clothing	117.4
Transportation	119.7
Health and personal care	124.4
Recreation and reading	115.5
Tobacco and alcohol	116.1

Source: Bureau of Statistics Government of the Northwest Territories

Table 12-16
NCPC utility service rate schedule, electrical energy, NWT and Yukon, effective April, 1984 (all figures shown are in cents per kWh)

	Domestic Service non-government		Domestic Service government	
Community	first 300 kWh/ month	all over 300 kWh/ month	first 300 kWh/ month	over 300 kWh/ month
NWT:				
Aklavik	17.35	31.40	38.26	38.26
Arctic Bay	21.41	35.21	47.55	47.55
Arctic Red River	29.20	47.99	70.00	70.00
Baker Lake	21.52	38.81	42.30	42.30
Broughton Island	29.44	48.47	61.49	61.49
Cambridge Bay	19.65	35.20	38.84	38.84
Cape Dorset	27.93	45.22	48.22	48.22
Chesterfield Inlet	24.87	42.04	62.48	62.48
Clyde	14.50	26.82	41.32	41.32
Coppermine	18.18	34.85	40.28	40.28
Coral Harbour	19.40	33.08	39.26	39.26
Eskimo Point	22.76	38.32	42.75	42.75
Fort Franklin	16.35	30.65	40.56	40.56
Fort Good Hope	18.55	34.33	48.14	48.14
Fort Liard	20.10	35.65	57.03	57.03
Fort McPherson	15.88	29.07	37.09	37.09
Fort Norman	21.17	35.35	40.54	40.54
Fort Resolution	6.93	7.67	11.14	11.14
Fort Simpson	16.18	22.41	27.39	27.39
Fort Smith	9.68	7.38	—	—
Frobisher Bay	22.11	30.20	32.17	32.17
Gjoa Haven	19.27	33.46	49.47	49.47
Grise Fiord	19.84	33.52	46.81	46.81
Hall Beach	15.65	31.71	54.35	54.35
Holman Island	22.56	38.47	61.76	61.76
Igloolik	15.04	30.72	36.46	36.46
Inuvik	17.63	23.23	24.51	24.51
Jean Marie River	23.74	42.03	66.54	66.54
Lac la Martre	19.99	35.90	67.92	67.92
Lake Harbour	30.54	49.57	60.19	60.19
Nahanni Butte	27.91	45.07	70.00	70.00
Norman Wells	15.05	23.37	24.15	24.15
Pangnirtung	25.43	40.10	46.82	46.82
Paulatuk	24.01	42.78	70.00	70.00
Pelly Bay	35.74	57.38	70.00	70.00
Pine Point	5.20	4.41	—	—
Pond Inlet	18.82	30.50	36.39	36.39
Rae Lake	22.21	38.25	65.68	65.68
Rankin Inlet	20.19	35.75	39.36	39.36
Repulse Bay	17.94	29.62	39.96	39.96
Resolute	21.76	32.97	33.10	33.10
Sachs Harbour	21.02	37.31	52.03	52.03
Salt River	8.76	9.64	15.31	11.93
Snowdrift	20.10	29.69	46.25	46.25
Spence Bay	22.13	33.19	47.23	47.23
Tuktoyaktuk	18.47	28.78	35.19	35.19
Whale Cove	22.09	38.11	63.51	63.51
Wrigley	21.26	32.46	48.89	48.89

Yukon: (effective March 26, 1984)

Table 12-16 *(Continued)*

Community	Domestic Service non-government		Domestic Service government	
	first 300 kWh/ month	all over 300 kWh/ month	first 300 kWh/ month	over 300 kWh/ month
Dawson	15.55	20.71		
Faro	7.53	7.53		
Johnson's Crossing	33.59	54.44		
Mayo	7.44	5.39		

NOTES:

1. As of 1982, there was a $5.00 minimum bill/service charge in all locations in the NWT. The minimum bill/service charge in all locations in Yukon is $5.57 as of March 26, 1984.

2. Minimum bill/service charge in Whitehorse is $5.57. Rate per kWh there is 11.82¢ for all residential consumption. For commercial consumption there is a service charge of $22.26 per month, or $4.452 per KW or KVA of billing demand per month, whichever is greater. The energy charge is 6.49¢ per KWH for all consumption. General service has the same service charge with an energy charge of 12.05¢ per KWH.

Table 12-17
Average Petroleum Retail Prices (March 1984)

	Gasoline				Home
	Regular Unleaded		Regular Leaded		
	self service	full service	self service	full service	Heating Oil
			(¢/litre)		
Whitehorse	55.2	54.6	53.0	52.7	41.0
St. John's	54.8	57.5	52.6	54.9	36.8
Charlottetown	—	56.5	—	54.5	35.4
Halifax	—	53.2	—	51.4	34.8
Saint John	—	52.5	—	50.2	35.5
Quebec	56.3	56.8	53.6	54.2	35.7
Montreal	56.3	57.1	53.8	54.1	35.4
Ottawa	49.1	49.2	46.7	46.8	35.1
Toronto	46.6	46.6	44.2	44.2	34.5
Thunder Bay	50.4	51.4	47.9	48.8	34.8
Winnipeg	48.5	49.0	46.7	47.2	35.0
Regina	42.8	43.2	41.0	41.4	34.2
Saskatoon	43.4	43.8	41.6	42.0	34.4
Edmonton	42.1	42.6	40.3	40.8	—
Calgary	42.9	43.7	41.1	41.8	—
Vancouver	51.3	51.9	49.5	50.0	34.4

Source: Statistics Canada

Table 12-18

Commercial Services, Government and Non-government for the NWT effective April, 1984 (per kWh)

Non-Government Location	first 40 kWh/month	next 160 kWh/month	next 200 kWh/month	excess 400 kWh/month
Aklavik	34.37	34.67	34.67	34.67
Arctic Red River	46.67	46.67	46.67	46.67
Frobisher Bay	29.60	29.60	29.60	29.60
Norman Wells	24.59	24.59	24.59	24.59
Inuvik	23.48	23.48	23.48	23.48
Chesterfield Inlet	51.39	51.39	51.39	51.39
Rankin Inlet	37.14	37.14	37.14	37.14
Fort Smith	15.58 first 100 kWh/month 10.63 per kWh for next 400 kWh per month 6.52 per kWh for all over 500 kWh per month			
Commercial Service Government				
Aklavik	38.26	38.26	38.26	38.26
Arctic Red River	70.00	70.00	70.00	70.00
Frobisher Bay	32.60	32.60	32.60	32.60

13.0 Tourism and Recreation

13.1 General

Tourism is an important and growing factor in the economy of the North. There is easy access to most areas by air and road transportation now reaches beyond the Arctic Circle with the Dempster Highway to Inuvik. In addition, visitors can travel by ferry or cruise ship up the Pacific coast of Alaska and then by rail to Whitehorse.

Spectacular scenery, abundant wildlife and the feeling of being far away from the usual surroundings are some of the attractions which bring an increasing number of visitors to both Yukon and the Northwest Territories.

Yukon — Tourism, Recreation and Culture

The Department of Tourism, Recreation and Culture is responsible for development and management of libraries and archives services, recreation services and heritage resources. The key responsibilities of the recreation division are to encourage and support the development of sports, arts, community recreation and fitness opportunities. Maximizing the potential of the Yukon tourism industry by managing and administering an extensive tourism marketing and development program forms part of the department's mandate. The department has also undertaken the responsibility of coordinating the government's participation in the 1986 World Exposition in Vancouver.

Organization

The department has five programs:

- Libraries and Archives
- Heritage and Cultural Resources
- Tourism
- Recreation
- Expo '86

Financial Statement ($ in 000's)

Operating and Maintenance	1983/84
Administration	249
Libraries and Archives	988
Heritage	201
Tourism	1,668
Recreation	842
Expo '86	1
	3,948
Capital	1,882
Revenue	(21)
Recoveries (O&M)	(12)
(Capital)	(870)
TOTAL	(882)

I Libraries and Archives Branch

In late February, 1984, the Yukon Archives Branch and Library Services Branch were merged into one branch with three sections: Yukon Archives, Technical Services and Public Library Services.

II Recreation Branch

A new Recreation Act and Public Lotteries Act passed in the fall session of the Legislative Assembly terminated the two year public recreation review process. The new Recreation Act provides for an expanded mandate and increased resources at the community level while providing new support to territorial arts and sports programs.

III Tourism Branch

A. Tourism Marketing

The objectives of the Tourism Branch are the development of visitor traffic to Yukon by increasing:

a) the recognition by potential tourists that Yukon is a desirable destination;
b) the number of visitors;
c) the average length of stay of visitors;
d) the length of the "tourism" season; and
e) the development of outdoor and winter tourism.

In 1983, over 80,000 enquirers for Yukon travel information were sent the Yukon travel guide, "Yukon — You're More Than Welcome". An additional 120,000 guides were distributed through automobile associations, travel agents, tour operators, Tourism Canada, hotels and travel information centres in and outside Yukon. A total of 20,000 Yukon Travel Agents Manuals were distributed to tour operators, travel agents and airlines and to fulfill direct enquiries.

To further promote travel to Yukon, 135 travel influencers from nine countries visited the territory including two tour operators, 70 travel agents and 63 writers and TV film crew members. Eight sixty-second TV vignettes were produced on Yukon and its people and are being used across Canada and throughout the U.S.A.

B. Tourism Development

The unit is responsible for coordination with industry in such areas as developing tourism strategies and development of tourism attractions and related infrastructure.

The branch was also responsible for the implementation of the Canada-Yukon Tourism Agreement (CYTA), a six million dollar, three-year tourism development program which concluded in March, 1984. Yukon contributed $900,000 to this joint program with the balance provided by the federal government. All CYTA projects are now complete, and an evaluation of the entire program is currently underway.

Projects successfully completed under CYTA include:

In Dawson City

- Construction of new downtown hotel
- Expansion of Triple J Cabins Motel
- Construction of new Visitor Reception Centre with an historic design
- Construction of historic facades on 20 buildings
- Construction of pedestrian boardwalks throughout the downtown area
- Renovation/expansion of Diamond Tooth Gertie's Gambling Casino

In Whitehorse

- Restoration of Old Log Church
- Renovation of Visitor Reception Centre
- Development of Guild Hall

Other Projects include:

- Assistance for a lunch/threatre attraction in Carcross
- A new Visitor Reception Centre in Carcross
- Development of Alaska Highway Interpretive Centre in Watson Lake
- Financial assistance for three wilderness adventure guided tour companies

IV Heritage Branch

Research continued on the preparation of heritage policy and legislation. A paper outlining major recommendations has been released and a schedule of public meetings was conducted in ten communities.

V Yukon's Participation in Expo '86

The 1986 Exposition theme of Transportation and Communication and the location of the fair in Vancouver provides an ideal opportunity for Yukon. Yukon's participation is intended to assist in the growth of the tourism industry, to illustrate the economic opportunities in the North, and to generally enhance the image of Yukon as a place with a bright future.

The Department of Tourism, Recreation and Culture, in Yukon does not publish a figure for employment related directly to tourism but both the service and transportation sectors of the economy, which are tourism-related, show increases in employment. Estimates of the contribution of the industry to the economy in dollars unadjusted for inflation are shown in Table 13-1.

NWT — Tourism, Recreation and Arts and Crafts

Tourism

During 1983, a five year plan for developing the tourism industry in the Northwest Territories was approved by the Executive Council. A comprehensive guide training program for Northwest Territories guides was also undertaken.

In direct response to requests from the N.W.T. Travel Industry Association to have the Explorers' Guide published by the private sector, the 1984 edition is being published by Outcrop Ltd. of Yellowknife. Other firsts for the Explorers' Guide will be inclusion of advertising and 72 pages of colour.

Travel Arctic entered into negotiations with Manitoba, Saskatchewan and Alberta to form a new cooperative marketing organization to sell travel programs. TravelArctic continued to market programs through the Canada West organization and worked closely with the N.W.T. Travel Industry Association and the six tourism zone associations by participating in joint marketing and promotional activities.

The decline in the number of enquiries and visitors to the NWT in 1983 was proportionately less than the Canadian average. In particular, the economic recession resulted in fewer visits by US residents to Canada, including the Northwest Territories.

The Northwest Territories, in co-operation with Parks Canada and several provinces, developed a new program to designate heritage rivers. The Canadian heritage rivers system will incorporate nominations for heritage rivers. The NWT input includes a survey of 41 NWT rivers in the territory.

Recreation

A wide variety of recreational activities, organized and unorganized, is available to residents in the NWT Many communities have facilities such as arenas and playgrounds or swimming pools. Outdoor sports and recreation are natural favourites in the NWT in both winter and summer. The NWT Public Library System offers services and community activities such as clubs, seasonal festivals, movies and dances are popular.

Arts and Crafts

The economic decline throughout Canada had an adverse effect on the arts and craft industry in the NWT. To counter this, the Department of Economic Development and Tourism provided the services of a consultant to two cooperatives which are major sculpture producers. It also developed a closer working relationship with the federally supported agencies which encourage northern art and craft production.

Special Events

Yellowknife's 50th anniversary celebrations and the 1984 papal visit to Fort Simpson should boost tourism, as should the NWT's participation in Expo '86, the World Exposition in Vancouver, B.C.

Full information on all aspects of travel to either Yukon or the NWT may be obtained from the respective departments of tourism.

In Yukon:
Department of Tourism, Recreation and Culture
Government of Yukon
Post Office Box 2703
Whitehorse, Yukon Y1A 2C6

In the NWT:
Department of Economic
Development and Tourism,
Government of the Northwest Territories
Yellowknife, NWT X1A 2L9

13.2 Parks

13.2.1 General

Yukon and the NWT both have campgrounds as well as territorial and national parks. The former are generally located on or close to highways and provide picnic sites and places for overnight camping. National parks are usually larger in area and may be less accessible. There is one national park, Kluane, in Yukon; in the NWT there are three — Auyuittuq, Nahanni and Wood Buffalo.

Information on territorial parks may be obtained from the territorial offices of tourism, whose addresses were given in the preceding section.

If you are driving into either Yukon or the NWT you will find a Visitor Information Centre conveniently located to provide information on the parks and campgrounds. (See Section 13.3.1.)

Information on national parks any be obtained as follows:

Kluane:
Superintendent
Kluane National Park
Haines Junction, Yukon YOB 1LO

Nahanni, Wood Buffalo and Auyuittuq:
Director
Prairie Region
Parks Canada
Main Floor, 114 Garry Street
Winnipeg, Manitoba R3C 1G1

13.2.2 Kluane National Park

Kluane National Park is located in the southwest corner of Yukon bordering Alaska and British Columbia. It is accessible by road from Whitehorse or Haines, Alaska; park headquarters are at Haines Junction, Yukon.

The park is mountainous and about half its area is covered by snow and icefields year-round. Canada's highest mountain, Mt. Logan (5950 m), is in the park.

Wildlife is abundant and includes grizzly and black bears, moose, Dall sheep, mountain goats, occasional caribou, wolf, coyote, fox, wolverine, arctic ground squirrel, lynx, beaver, otter, muskrat, mink, marmot and snowshoe hare. Birds, too are numerous; over 170 species have been reported, including several that are rare elsewhere.

Recreational activities include hiking (day trip or overnight), boating on Kathleen Lake, white-water canoeing and kayaking and mountain climbing. Visitors are advised to contact a park warden for information before taking a day trip and must register for any overnight trips or climbing expeditions.

13.2.3 Nahanni National Park

Nahanni National Park is a wilderness area in the watershed of the Nahanni River, a tributary of the Liard which in turn flows into the Mackenzie near Fort Simpson, NWT, 145 km by air east of the southeast park boundary.

The park is roughly 320 km in length, reaching up the Nahanni River from the Splits, a wide and shallow stretch just upstream from Nahanni Butte where the warden station is located, to the Rabbit Kettle Hotsprings at the northwest end of the park. The river is spectacular but treacherous and experience is necessary for safe canoeing. Outfitters in the area provide guided trips which allow the less hardy to see the canyons, falls and hot springs.

There is no road access into the park, but it can be reached

by air or water. Information on outfitters is available from the

Director, TravelArctic, Yellowknife, NWT X1A 2L9.

13.2.4 Wood Buffalo National Park

Wood Buffalo National Park straddles the border between Alberta and the NWT. It is 44,980 km^2 in area and is one of the world's largest national parks.

This park was established in 1922 as a haven for Canada's last herd of wood bison. Now interbred with plains bison, the hybrid population is about 6000. The park is also famous as the summer home and breeding ground of the world's only flock of whooping cranes.

The park headquarters at Fort Smith, NWT, provides access to the campground at Pine Lake and to 50 km of hiking trails and a gravel road system which runs through the northeast section of the park. The Slave River Rapids near Fort Smith is home to North America's only colony of river-nesting white pelicans.

Recreational activities include fishing and hiking to view and photograph the interesting scenery and wildlife.

13.2.5 Auyuittuq National Park

Auyuittuq National Park on Baffin Island, NWT, means "the place which does not melt" in Inuktitut, a reference to the Penny Ice Cap, a massive glacier at the heart of the park. Created in 1972 to preserve a unique arctic wilderness of perpetual ice, jagged mountain peaks, deep valleys and fiords, the park has 24 hours of daylight from May through July and total darkness in midwinter.

Access to the park for hikers and mountain-climbers is by air via Frobisher Bay to Pangnirtung and from there to the head of the fiord by Inuit freighter canoe, snowmobile or on foot (a distance of 31 km).

13.2.6 Territorial Parks — NWT

The Government of the Northwest Territories (GNWT) has two major parks now, and a further two are being created. The Department of Tourism and Parks operates a campground at Prelude Lake; within the boundaries of the park private entrepreneurs own and operate cottage sites, a fishing lodge, restaurants and other facilities of interest to tourists. At Blackstone Park on the Liard Highway, private outfitters will guide trips into Nahanni National Park.

In addition, the government operates parks jointly with the municipalities in Yellowknife, Hay River, Fort Providence, Fort Smith and Pine Point, and picnic sites and small campgrounds along major highways in the territory.

During 1983, a five-year plan for developing the tourism industry in the NWT was approved by the Executive Council. A comprehensive guide training program for NWT guides was also undertaken.

13.2.7 Territorial Parks — Yukon

There are about 50 campgrounds and picnic sites throughout Yukon. Sites are cleaned regularly and permits are required, but only at Dawson is an overnight fee charged.

Campgrounds range in size from four tent sites to 100 or more. Usual facilities include tent pads with tables at each site and a centrally located well, kitchen shelter complete with stove and wood, and pit privies. When the campground is on a body of water there are usually boat launching ramps.

A comprehensive statement of territorial parks policy and objectives is being formulated.

13.3 Commercial Facilities

13.3.1 Locations, accommodation, rates

In both Yukon and the NWT, all but the smallest communities have hotel and/or motel accommodation as well as restaurant facilities. However, reservations are usually necessary, especially in the summer. Price ranges for accommodation are generally similar to or somewhat lower than those in southern Canada, but rates are subject to change without notice and should be checked at the time of travel.

In Whitehorse (a city with three-fifths of the population of Yukon) there are 800 hotel and motel rooms, fine restaurants and cocktail lounges and all the usual urban amenities — shops, cinemas, tour and travel agents, banks, hospitals, etc. Convention facilities are available for meetings of up to 400 people. The cross-country ski chalet includes a convention room in addition to a lounge, a restaurant, showers and saunas.

Outside Whitehorse and other Yukon municipalities, there are roadside lodges and well-maintained campgrounds at frequent intervals along the highways, and more than two dozen wilderness camps accessible by air. A complete listing of available recreational services and facilities is published in the official Yukon travel guide, *Yukon, Canada's Great Frontier.* Write to Tourism Yukon, Box 2703, Whitehorse, Yukon Y1A 2C6. For the traveller motoring in Yukon, government information centres are open seven days a week from mid-May to mid-September in Watson Lake, Whitehorse, Haines Junction (Kluane Park headquarters), Beaver Creek and Dawson City.

Travellers' accommodation is also widely available in the NWT — from the capital, Yellowknife, with just under 500 hotel or motel rooms, to Grise Fiord, 1930 km to the northeast, which offers accommodation for 16 in seven rooms with kitchen facilities at the Grise Fiord Lodge. Along the territorial highway system there are many well-planned campgrounds and day-use sites. These usually have areas for tenting and recreational vehicle parking, sanitary facilities, covered picnic shelters and firewood. The maximum stay in one camp is 14 days; an Annual Entry Permit is required which costs $15 for non-residents and $10 for residents. In addition, some campgrounds charge $5 per night. The NWT also has over 50 lodges and camps, and many outfitters serving sport fishermen, hunters and naturalists.

Detailed information is given in *The Explorers' Guide* published by Outcrop Ltd. of Yellowknife. Write to Box 1350, Yellowknife, NWT X1A 2N9. In Yellowknife, the TravelArctic Information Centre is open all year and there are government Visitor Information Centres at 60a/o north on Highway 1 and south of Fort McPherson on the Dempster Highway.

13.3.2 Activities — fly-in fishing, hunting, touring — accommodation, facilities, cost

In the north, fly-in fishing trips not only guarantee top-notch fishing, but also provide an opportunity to see this spectacular country from the air.

In Yukon the fees for fishing licences are:

Canadian residents	$5/season (April 1-March 31)
Non-residents	$5/day $10/five days $20/season
Special National Parks Licence	$4/season

The names and mailing addresses of outfitters and guides in any region may be obtained by writing or telephoning the tourism department of the territorial government concerned.

In Yukon contact:
General Inquiries
Tourism Marketing
Department of Tourism, Recreation
and Culture,
Government of Yukon
Whitehorse, Yukon Y1A 2C6
Telephone: (403) 667-5340

In the NWT contact:
TravelArctic
Government of the Northwest Territories
Yellowknife, NWT X1A 2L9
Telephone: (403) 873-7200

Prices of accommodation vary greatly, depending on the size of the party and services included, and should be checked at travel time.

The NWT is well known for the trophy quality of its sport fisheries. The Tree River, Great Bear and Great Slave Lakes and the upper Mackenzie River are being managed as trophy fisheries. Charter planes with floats are available in many communities and fly-in fishing is easily arranged. Charter rates start at around $2 an hour. Fishing licence fees are $5 for Canadian residents and $15 for non-residents. Rates for the many lodges and camps vary widely, with a low of around $600 a week. Complete information on fishing regulations may be obtained from the District Manager, Fisheries and Oceans Canada, Box 2310, Yellowknife, NWT X1A 2L9.

Yukon and the NWT are the last true wilderness areas in North America where big game trophy animals still exist in relatively large numbers. Hunters come from all parts of the world to participate in this activity.

In the NWT, big game hunting outfitters operate in the Mackenzie Mountains for species like Dall sheep, bear, moose and caribou. They offer package trips of one or two weeks with meals and transportation included.

The Hunters and Trappers Associations in the NWT have been granted the right to control the hunting of polar bear which may be hunted only by dog team. Bookings for polar bear hunts may be made through the Hunters and Trappers Associations on Holman Island, Sachs Harbour and Allen Island. These associations may be contacted through:

Wildlife Service
Government of the Northwest Territories
Yellowknife, NWT X1A 2L9

Stamp fees for big game species (limit of one per species) are $10 for non-residents of the NWT and $25 for non-resident aliens. Trophy fees are payable on departure and are $100 for each animal, except grizzly bear (N/A), polar bear ($500), muskox ($500) and wolf and wolverine ($50).

Lists of guides are available from the area wildlife office in the community where the hunt is to be based.

In Yukon, it is necessary for hunters to hire a registered outfitter, except for small game and migratory birds. There are 22 big game guiding areas in the territory, each having an assigned outfitter; the list is available from Tourism Yukon. General travel and accommodation information for Yukon is available through:

Yukon Visitors Association
208D Steele Street
Whitehorse, Yukon Y1A 2C6

There are many kinds of wilderness expeditions in addition to fishing and hunting. Ski-touring, snowshoeing, dog-sledding, hiking, mountaineering, horseback riding and canoeing tours are conducted from various camps and lodges. Such trips may be guided, or the traveller may rent gear and basic transportation for unguided trips. Topographical maps may be obtained from:

Department of Energy, Mines and Resources
Surveys and Mapping Branch
615 Booth Street
Ottawa, Ontario K1A 0E9

13.4 Sports

13.4.1 Local events — participation

In Yukon, the Recreation Branch of the Department of Education provides financial assistance to communities for the development of sports and recreation programs. Activities start with dog races in January and continue through the winter, including such events as log sawing, snowshoe and snowmobile races, and such local specialties as smoosh-skiing, pancake races and tea boiling. Spring and summer bring spring skiing and highland games, horse shows, golf, cross-country runs and similar events. The Klondike International Outhouse Race is held each Labour Day weekend in Dawson City.

Cross-country skiing is a particularly popular sport in Yukon, where the Whitehorse Ski Club has a membership of 1500. In 1981, the final event of the World Cup Cross-Country Ski Series was held in Whitehorse at the ski chalet, where there is a 35 km network of world class ski trails. The list of events in a typical year is given in Table 13-3.

The NWT has recently seen a dramatic increase in the number of community sports associations and their memberships, sparked by the efforts of Sport North (the Federation of Territorial Sport Associations) in developing sporting opportunities, qualified coaches and community recreational leadership. Recreational sports often have cultural aspects, as in the Northern Games. These feature traditional Inuit and Indian sports, dances, drumming competitions and the popular Good Woman Contest — a display of traditional life skills. The Northern Games are usually held every two years on a national basis, while regional events take place annually.

As in Yukon, winter sports include dog races, skiing, snowshoe and snowmobile racing. There are also such imported games as curling, together with uniquely northern events such as igloo building. A complete list of events for a typical year is given in Table 13-4.

13.5 Special Events

Both Yukon and the NWT have long and interesting programs of special events, most of which are repeated annually. The tables below list these as published in the respective tourist brochures for 1982. For full details and dates for subsequent years, contact the addresses given in the footnotes to each list.

References

Explorers' Guide. Yellowknife: TravelArctic, Government of the Northwest Territories.

Yukon: Canada's Great Frontier. Whitehorse: Yukon Visitors Association and Tourism Yukon.

Table 13-1

Estimated dollar value of tourism to the economy of Yukon in year shown

Year	Number of visitors*	Dollars (unadjusted for inflation)
1962	not available	2,000,000
1971	183,700	12,000,000
1981	386,800	51,000,000
1983	394,000	77,000,000

Source: INAC Publication QS-2003-020-EE-A2; Yukon Economic Research and Planning Unit and Department of Tourism, Recreation and Culture, Yukon.

* The number shown is taken from border crossing data. Persons entering from the south who go on to visit Alaska, returning via Yukon, would be counted twice.

Table 13-2

Number of visitors and estimate of their expenditure in the NWT in year shown

Year	Number of visitors	Dollars (unadjusted for inflation)
1968	9,000	3,200,000
1971	17,700	5,500,000
1982	44,000	40,000,000

Source: INAC Publication QS-2003-020-EE-A2 and Bureau of Statistics, GNWT and NWT Data Book 84/85

Table 13-3

Typical Special Events Calendar — Yukon

Approximate Date	Event	Location
January	Yukon Championship Dog Race	Whitehorse
February 19-20	Kiki Bird Days	Watson Lake
February 2-6	Ice Worm Squirm	Faro
February 21-28	Sourdough Rendezvous	Whitehorse
February 14	Bay Citizens Tour	Whitehorse
March 12-14	Winterlude	Carmacks
March 19-21	Spring Carnival	Dawson City
early march	Winter Carnival	Mayo
mid-March	Annual Winter Carnival	Elsa
March 25-28	Sleeping Bag Bonspiel	Faro
late March	Carcross-Atlin Mail Run	Carcross
late March	International Curling Bonspiel	Whitehorse
early April	Old Timer's Hockey Tournament	Whitehorse
late April	Spruce Bog Craft Fair and Sale	Whitehorse
Easter Saturday	Haines Highway Marathon	Haines Road
May 22-23	Break-up Drama Festival	Dawson City
late June	5th Annual Highland Games	Whitehorse
June 18-20	11th Annual Dog Show	Whitehorse
June 19-20	CKRW Kiwanis Annual Yukon Family Fishing Derby	Whitehorse
late June	Horse Show	Whitehorse
June 21	Tennis Tournament	Whitehorse
June 20	Golf Tournament	Whitehorse
July 4	Canada Day/Independence Day	Dawson City
July 17	International Midnight Dome Race	Dawson City
July 18	Arizona Charlie Meadows Night	Dawson City
July 18	Inner Tube Race	Whitehorse
July 24-25	Music Festival	Dawson City

July	Spruce Bog Craft Fair and Sale	Whitehorse
August 13-16	Discovery Days	Dawson City
August 13-16	Discovery Days	Watson Lake
August 20-22	Fireweed Festival	Faro
mid-August	Kiwanis Horticultural & Hobby Show	Whitehorse
late August	Softball Tournament	Whitehorse
September 3-5	Farrago Music Festival	Faro
September 5	Klondike International Outhouse Race	Dawson City
November	Spruce Bog Craft Fair and Sale	Whitehorse

Source: *Yukon (Canada's Great Frontier) 1982*, a publication of Yukon Visitors Association, 208D Steele Street, Yukon Y1A 2C6, and Tourism Yukon, Box 2703-5C, Whitehorse, Yukon Y1A 2C6

Table 13-4
Typical Special Events Calendar — NWT

Approximate Date	Event	Location
March	Winter Carnival	Fort Resolution
March	Beaver Tail Jamboree	Fort Simpson
mid-March	Wood Buffalo Frolics	Fort Smith
March	Fitz-Smith Ski-a-thon	Fort Fitzgerald to Fort Smith
late March	Ookpik Carnival	Hay River
late March	International Bonspiel	Inuvik
late March	Winter Carnival	Norman Wells
mid-March	Moccasin Carnival	Wrigley
late March	Caribou Carnival and Championship Dog Derby	Yellowknife
weekend after Easter	Peel River Jamboree	Fort McPherson
April	Toonik Tyme	Frobisher Bay
April	Top of the World Ski Championships	Inuvik
April	Karnival Kapers	Pine Point
April	Rankin Inlet Snowmobile Race	Rankin Inlet
April	Beluga Jamboree	Tuktoyaktuk
Easter weekend	Annual Sportsmen's Spiel	Yellowknife
May	White Fox Jamboree	Sachs Harbour
May	Umingmuk Frolics	Cambridge Bay
June 22	Hub of the North Marathon	Hay River
June	Kingalik Jamboree	Holman Island
third weekend of June	Pine Days	Pine Point
June	Annual Midnight Golf Tournament	Yellowknife
June 21-July 1	Canada Week Celebrations	Yellowknife
late June	Folk on the Rocks	Yellowknife
mid-July	Northern Games	various

July 1	Canada Day	Fort Simpson Frobisher Bay Hay River
third week of July	Tuk Cup	Tuktoyaktuk
mid-July	Dene Celebrations	Southern Mackenie
first weekend of August	Sports DayFort Liard	
August	Mackenzie Daze	Fort Providence
August 15	Deninoo Days	Fort Resolution
August	Keewatin Regional Summer Festival	Whale Cove
early September	Fall Fair and World Championship Fiddling and Jigging Contest	Hay River
September	Country Fair North of Sixty	Yellowknife
Thanksgiving	Delta Daze	Inuvik

Source: Explorers' Guide '82 (Canada's Arctic) Northwest Territories, a publication of TravelArctic*, Government of the Northwest Territories, Yellowknife, NWT X1A 2L9

* N.B. Now published by Outcrop Ltd. of Yellowknife.

14.0 Locations of Government Offices in the North

There are offices of both the federal and territorial governments throughout the North. Locations, mailing addresses and, in most cases, telephone numbers are listed below.

14.1 Federal Government Departments and Agencies.

Canadian Broadcasting Corporation:	*Telephone Number*
CBC Inuvik Bag Service 8 MacKenzie Road Inuvik, NWT X0E 0T0	(403) 979-4411
CBC MacKenzie Box 160 Yellowknife, NWT X0E 1H0	(403) 873-3464
CBC Frobisher Bay Box 490 Frobisher Bay, NWT X0A 0H0	(819) 979-5353
CBC Keewatin Rankin Inlet, NWT XOC OGO	(819) 645-2885
CBC Yukon 3101-3rd Avenue Whitehorse, Yukon	(403) 667-6261
Central Mortgage and Housing Corporation: CHMC Bellanca Building PO Box 2460 Yellowknife, NWT X1A 2T8	(403) 873-2637
CMHC 2090A Financial Plaza Whitehorse, Yukon	(403) 667-4237
Department of Communications: Inspector Box 540 Fort Smith, NWT XOE OTO	(403) 872-2187
10th floor Precambran Building Box 2700 Yellowknife, NWT X1A 2R1	(403) 873-3568
Department of Employment and Immigration: Director of Employment and Insurance CEIC Scotia Centre 5102-50th Avenue PO Box 1950 Yellowknife, NWT X0E 1H0	(403) 920-8400
Director of Employment and Insurance CEIC Royal Centre 1055 Georgia Street West PO Box 11145 Vancouver, BC V6E 2P8	(604) 666-8584

Canada Employment Centres are located as follows:
Federal Building
PO Box 380
Fort Simpson, NWT X0E 0N0 (403) 695-2238

Pinecrest Building
McDougal Road
PO Box 1018
Fort Smith, NWT X0E 0P0 (403) 872-2747

Royal Bank Building
PO Box 639
Frobisher Bay, NWT X0A 0H0 (819) 979-5315

Federal Building, Room 202
PO Box 1065
Hay River, NWT X0E 0R0 (403) 874-6739

Kingmingya Road
PO Box 1678
Inuvik, NWT X0E 0T0 (403) 979-2122

General Delivery
Rankin Inlet, NWT X0C 0G0 (819) 645-2853

Room 101, Federal Building
Whitehorse, Yukon Y1A 2B5 (403) 667-5050

Scotia Centre, 2nd Floor
5102-50th Avenue
Yellowknife, NWT X1A 2R3 (403) 920-8400

Department of Energy, Mines and Resources:
Precambran Building
2922-52nd Street
Yellowknife, NWT X0E 1H0 (403) 873-4573

2078-2nd Avenue
Whitehorse, Yukon (403) 668-2828

Department of the Environment:

In addition to the locations shown, there are weather stations operated by the Atmospheric Environment Service at many northern points, in general wherever there is an airport with regular service. See the local telephone directory for listings or call the airport.

Environmental Protection Service (403) 667-6487
Room 225, Federal Building
Whitehorse, Yukon

Canadian Wildlife Service
202-204 Range Road
Whitehorse, Yukon (403) 667-2285

Canadian Wildlife Service
9th Floor
Bellanca Building
Box 637
Yellowknife, NWT X1A 2N5 (403) 873-3962

Environmental Protection Service
Box 637
Yellowknife, NWT X1A 2N5 (403) 873-3456

Department of Fisheries and Oceans:
122 Industrial Road
Whitehorse, Yukon (403) 667-2235

Box 2310
Yellowknife, NWT X0E 1H0 (403) 873-5831

Department of National Health and Welfare:

In addition to the regional offices of the department in Whitehorse and Yellowknife, there are hospitals, public health centres and nursing stations at many northern locations.

Regional Director
Medical Services Branch
Health and Welfare Canada
Yukon Manor
2 Hospital Road
Whitehorse, Yukon Y1A 3H8 (403) 667-6461

Regional Director
Medical Services Branch
Health and Welfare Canada
Bag 7777
Yellowknife, NWT X1A 2R3 (403) 873-5911

Department of Indian and Northern Affairs:
Northern Affairs Program
200 Range Road
Whitehorse, Yukon Y1A 3V1 (403) 668-5151

PO Box 1500
Yellowknife, NWT X1A 2R3 (403) 920-8110

Indian and Inuit Affairs Program
PO Box 4100
Whitehorse, Yukon Y1A 3S9 (403) 667-7855

4914-50th Street
Bellanca Building
PO Box 2760
Yellowknife, NWT X0E 1H0 (403) 873-5191

Department of Justice:
Yellowknife Regional Office
City Hall Building
Box 8
Yellowknife, NWT X0E 1H0 (403) 873-3551

Whitehorse Crown Attorney's Office
Room 205, Casca Building
3105-3rd Avenue, Box 1076
Whitehorse, Yukon Y1A 1E5 (403) 667-4418

Department of Labour:

Labour Affairs Officer, Mountain Region
Room 208
3105-3rd Avenue
Whitehorse, Yukon (403) 668-4346

See Department of Employment and Immigration for listing of Canada Manpower Offices.

Department of National Defence:

Commanding Officer
Canadian Forces Northern Region
Detachment, Whitehorse
Room 241
Federal Building
Whitehorse, Yukon (403) 667-2559

Commanding Officer
Canadian Forces Station Inuvik
Box 1450
Inuvik, NWT X0E 0T0 (403) 979-2556

Department of National Revenue:

Manager of Customs
Room 116, Federal Building
Whitehorse, Yukon (403) 667-6471

Department of Public Works:

Civil Engineering
201 Range Road
Whitehorse, Yukon (403) 668-2181

Public Works Canada
Box 518, Bag 9999
Yellowknife, Yukon X1A 2R3 (403) 873-7114

Department of Regional Economic Expansion:

301-108 Lambert Street
Whitehorse, Yukon Y1A 1Z2 (403) 668-4655

Precambran Building
10th Floor
Yellowknife, NWT X1A 1C0 (403) 873-6225

Royal Canadian Mounted Police:

There are posts and detachments of the RCMP throughout the North. Check local telephone directories for listings, or contact:

Commanding Officer
"M" Division
4100-4th Avenue
Whitehorse, Yukon (403) 667-5555

Commanding Officer
"G" Division
RCMP
Bag 5000
Yellowknife, NWT X0E 1H0 (403) 920-8322

Department of the Secretary of State:

Room 240, Federal Building
308 Main Street
Whitehorse, Yukon Y1A 2B5 (403) 668-2721

Unit 1, Tallah Building
PO Box 610
Yellowknife, NWT X1A 2N5 (403) 920-8270

Department of Transport:

The department is responsible for the operation of most airports throughout the North; see local directories for listings of airport managers.

There are, in addition, offices responsible for various specialized functions:

Arctic Transportation Directorate
Box 1200
Yellowknife, NWT X1A 2N5 (403) 873-5380

Area Telecommunications and Electronics
Box 310
Yellowknife, NWT X0E 1H0 (403) 873-4041

Area Telecommunications and Electronics
Room 215, Operations Building
Whitehorse Airport
Whitehorse, Yukon (403) 668-2662

Canadian Coast Guard Base
Box 5002
Hay River, NWT X0E 0R0 no listing

Department of Communications
Telecommunications Regulations Branch
Room 201 - 4133 - 4th Avenue
Whitehorse, Y.T.
Y1A 1H8 (403) 667-5012

Supply & Services Canada
Whitehorse Purchasing Office
204 Lambert Street
Financial Plaza Building
Whitehorse, Y.T.
Y1A 1Z4 (403) 668-5808

NorthwesTel
301 Lambert Street
Box 2727
Whitehorse, Y.T.
Y1A 4Y4 (403) 668-5300

Airport Manager
Transport Canada
Room 3, Hangar 'A', Airport
Whitehorse, Y.T. (403) 668-2300

Public Service Commission of Canada
302 - 4114 - 4th Avenue
Whitehorse, Y.T.
Y1A 4N7 (403) 668-4487

Canada Post Office
308 Main Street
Whitehorse, Y.T.
Y1A 2B0 (403) 667-2412

Northern Canada Power Commission
Room 301, Federal Building
Whitehorse, Y.T.
Y1A 2B5 (403) 667-2828

14.2 Government of Yukon

Unless otherwise noted all government departments are located in the:

Yukon Government Administration Building
2071-2nd Avenue
Whitehorse, Yukon

Mail should be addressed to the department concerned at:

Government of Yukon
Box 2703
Whitehorse, Yukon Y1A 2C6

Executive Council

Hon. Chris Pearson,	*P.C. Whitehorse*	
Government Leader	*Riverdale*	
Minister of:	*North*	
Executive Council Office,	M.L.A. Office:	667-5122
Finance,	Residence:	668-4847
Public Service Commission.		
Hon. Dan Lang,	*P.C. Whitehorse Porter*	
Minister of:	*Creek East*	
Municipal & Community Affairs,	M.L.A. Office.	667-5427
Economic Development.	Residence:	633-2728
Hon. Howard Tracey,	*P.C. Tatchun*	
Minister of:		
Renewable Resources,	M.L.A. Office:	667-5293
Highways & Transportation,	Residence:	667-2745
Consumer & Corporate Affairs.		
Hon. Bea Firth,	*P.C. Whitehorse*	
Minister of:	*Riverdale*	
Education, Advanced Education	*North*	
and Manpower,	M.L.A. Office:	667-5428
Tourism, Recreation & Culture.	Residence:	667-2324
Hon. Clarke Ashley,	*P.C. Klondike*	
Minister of:		
Yukon Liquor Corporation,	M.L.A. Office:	667-5603
Yukon Housing Corporation,	Residence:	667-6537
Workers' Compensation Board.		
Hon Andy Philipsen,	*P.C. Whitehorse Porter*	
Minister of:	*Creek West*	
Health & Human Resources	M.L.A. Office:	667-5336
Government Services.	Residence:	633-2275

*Address for Cabinet Ministers: Box 2703, Whitehorse, Yukon Y1A 2C6

Government Departments and Agencies:
Executive Council Office

Deputy Minister	667-5421
Intergovernmental Relations	667-5297
Land Claims Secretariat	667-5717
Public Affairs	667-5431
Federal Relations Office (Ottawa)	(613) 234-3206

Legislative Assembly Office

Clerk of the Assembly and Chief Electoral Officer	667-5498
Government Members	667-5376
Opposition Members	667-5663

Consumer & Corporate Affairs

Deputy Minister	667-5256
Administrator, Consumer Services	667-5257
Administrator, Corporate Affairs	667-5225
Administrator, Labour Services	667-5259

Economic Development

Deputy Minister	667-5466
Director, Administrative Services	667-5378
Director, Economic Research & Planning	667-5461
Director, Energy/Special ARDA Branch	667-5462

Education, Advanced Education & Manpower

Deputy Minister	667-5126
Assistant Deputy Minister, Elementary & Secondary Schools	667-5141
Coordinator, French Language Centre	667-5610
Assistant Deputy Minister, Advanced Education & Manpower	667-5131
Director, Yukon College	667-4262

Finance

Deputy Minister	667-5343

Government Services

Deputy Minister	667-5744
Purchasing Information	667-5735
Manager, Transportation/Communications	667-5793
Queen's Printer	667-5783
Director, Administration	667-5410
Building & Rentals Manager Property Management	667-5104
Director, Public Works	667-5150
Manager, Building Construction	667-5805

Health & Human Resources

Dputy Minister	667-5746
General Inquiries	667-5674
Health Services	667-5209
Coordinator, Alcohol & Drug Services	667-5627
Coordinator, Vocational Rehabilitation Services	667-5669
Communication Disorders Clinic	667-5913

Highways & Transportation

Deputy Minister	667-5144
Director, Finance & Administration	667-5311
Manager, Highway Maintenance	667-5761
Manager, Highway Engineering	667-5456
Manager of Airports	667-5830
Motor Vehicles	667-5315
Chief, Weigh Stations & Enforcement	667-5920
Transport Public Utilities Board	667-5832

Justice

Deputy Minister	667-5124
Land Titles	667-5612
Public Administrator/Chief Coroner	667-5317
Judicial Administrator, Administrative Services	667-5446
Territorial Court	667-5441
Sheriff, Sheriff's Office	667-5451
Judges' Secretary, Supreme Court of Yukon	667-4431
Coordinator, Women's Bureau	667-5182
Director, Corrections	668-4903
Chief Probation Officer, Adult Probation Services	667-5231

Municipal & Community Affairs

Deputy Minister	667-5155
Municipal Services	667-5155
Lands Office	667-5215
Director, Municipal Engineering Branch	667-5707
Director, Property Assessments	667-5234
Director, Protective Services	667-5127

Public Service Commission

Deputy Minister	667-5252
Director, Recruitment & Labour Relations	667-5250
Director, Compensation	667-5201

Renewable Resources

Deputy Minister	667-5460
Land Planning Branch	667-5905
Wildlife Management Branch	667-5721
Director, Wildlife & Parks Services Branch	667-5715
Regional/District Offices	
Dawson	993-5492
Haines Junction	634-2247
Mayo	996-2202
Ross River	969-2202
Watson Lake	536-7363

Tourism Recreation & Culture

Deputy Minister	667-5238
Director, Library & Archives	667-5275
Director, Heritage Branch	667-5363
Director of Recreation	667-5608
Director of Tourism	667-5340
Expo 86 Coordinator	667-5435

Workers' Compensation Board

General Inquiries	667-5645

Yukon Housing Corporation

General Inquiries	667-5759

Yukon Liquor Corporation

Deputy Minister	667-5245

14.3 Government of the Northwest Territories

Unless otherwise noted all NWT offices are located in Yellowknife.

Mailing address for all departments:

P.O. Box 1320,
Government of Northwest Territories
Yellowknife, NWT X1A 2L9

Executive Council		*Area Code (403)*
Goverment Leader and Minister of Justice & Public Services	Hon. Richard Nerysoo	873-7112
Minister of Finance and Government Services	Hon. Thomas Butters	873-7128
Minister of Renewable Resources and Information	Hon. Nellie Cournoyea	873-7959
Minister of Economic Development & Tourism, and Energy, Mines & Resources	Hon. Tagak Curley	873-7139
Minister of Health and Social Services	Hon. Bruce McLaughlin	873-7113
Minister of Education, Status of Women and Aboriginal Rights & Constitutional Development	Hon. Dennis Patterson	873-7123
Minister of Local Government and Culture	Hon. Nick Sibbeston	873-7658
Minister of Public Works & Highways	Hon. Gordon Wray	873-7962

Commissioner's Office

Commissioner John H. Parker	873-7400

Legislative Assembly

Speaker of the Legislative Assembly	873-7629
Clerk	873-7457

Northwest Territories Government — Regional Offices:

Regional Director **(819) 979-5341**
Baffin Region
FROBISHER BAY, N.W.T.
X0A 0H0

Regional Director (403) 872-7220
Fort Smith Region
P.O. Box 5
FORT SMITH, N.W.T.
X0E 0P0

Regional Director (403) 979-7112
Inuvik Region
Bag Service No. 1
INUVIK, N.W.T.
X0E 0T0

Regional Director (819) 645-2856
Keewatin Region
P.O. Bag Service 002
RANKIN, INLET, N.W.T.
X0C 0G0

Regional Director (403) 983-2138
Kitikmeot Region Ext. 200
CAMBRIDGE BAY, N.W.T.
X0E 0C0

Government of the Northwest Territories
P.O. Box 1320
YELLOWKNIFE, N.W.T., X1A 2L9

Government Departments

Executive Council Secretariat	873-7100
Aboriginal Rights & Constitutional Development Secretariat	873-7143
Regional Operations Secretariat	873-7910
Priorities & Planning Secretariat	873-7334
Security	873-7131
Financial & Administration Services	873-7241
Energy, Mines & Resources Secretariat	873-7423
Audit Bureau	873-7106
Bureau of Statistics	873-7983
Intergovernmental Affairs, Protocol Officer	873-7150

Ottawa Office

Senior Advisor (613) 234-6525
Intergovernmental Affairs
Government of the N.W.T.
Suite 912 - 350 Sparks Street
OTTAWA, Ontario K1R 7S8

Edmonton Office

Senior Liaison Officer (403) 423-1959
Government of the N.W.T.
830 Melton Building
10310 Jasper Avenue
EDMONTON, Alberta, T5J 1Y7

Department of Economic Development & Tourism

Economic Development Agreement Secretariat	920-8743
Financial Services & Administration	873-7532
Tourism & Parks	873-7903
Business Development	873-7229

Department of Education

Advanced Education, Asst. Deputy Minister	873-7252
Program Services Division Asst. Deputy Minister	873-7234
Thebacha College, Fort Smith Director, William Stapleton	872-7520

Department of Finance

Comptroller-General	873-7338
Finance & Administration	873-7158
Treasury	873-7308
Comptrollership	873-7164

Financial Management Secretariat

Deputy Secretary to the Financial Management Board	873-7165

Department of Government Services

Finance	873-7522
Supply Services	920-8663
Petroleum Products	873-7201
Office Services & Administration	920-8654
Motor Vehicles	873-7406
Systems & Computer Services	873-7521

Liquor Control System
P.O. Box 1130
HAY RIVER, N.W.T. X0E 0R0 874-2100

Department of Health

Hospital Operations	873-7714
Health Programs & Standards	873-7711
Health Insurance Administration	873-7714

Department of Information

Language Bureau	873-7616
Public Affairs Division	873-7251
Audio-Visual Section	873-7258
Publications & Production Division	873-7247

Department of Justice & Public Services

Finance & Administration	873-7641
Legal Division	873-7437
Legislation Division	873-7462
Legal Services Board	873-7450
Lang Titles/Legal Registries	873-7490
Court Services	873-7488
Safety Division	873-7430
Mining Inspection Services	873-7075
Consumer Services	920-8055
Prince of Wales Northern Heritage Centre	873-7685
Library Services (Hay River)	874-6531

Department of Local Government

Finance & Administration	873-7613
Development	873-7302
Policy — Legislation	873-7232
Municipal Affairs Division	873-7329
Land & Assessment Division	873-7997
Community Airports Division	873-7725
Sport & Recreation Division	873-7781
Community Planning & Development Division	873-7569

Department of Personnel

Finance & Administration	873-7417
Staff Relations	873-7504
Labour Relations	873-7235
Personnel Services	873-7121
Office of Native Employment	873-7594

Department of Public Works & Highways

Policy, Planning & Training Division	873-7325
Contracts and Capital Planning	873-7256
Finance Division	920-8774
Architectural Division	873-7535
Engineering Division	873-7826
Operations Division	873-7397
Energy Conservation	873-7202
Highways Division	873-7328

Department of Renewale Resources

Finance & Administration	873-7752
Pollution Control Division	873-7654
Wildlife Management	873-7411
Field Services	920-8716
Environmental Planning & Assessment	920-8046
Science Advisory Board	873-7592

Department of Social Services

Finance & Administration	873-7313
Policy Planning & Support Services	873-7703
Corrections Service	873-7646
Social Service Programs	873-7119
Family & Children's Services	873-7312
Alcohol & Drug Services	873-7155
Financial Assistance Services	873-7312
Area Social Services	873-7276
Yellowknife Receiving Home	873-7298
Yellowknife Correctional Centre	873-4465

Independent Agencies, Boards and Councils

Advisory Council on the Status of Women
P.O. Box 1320,
Yellowknife, X1A 2L9
Telex 034-4-5528
Contact Sheila Keet 920-8776

Apprenticeship and Tradesmen's Qualification Board
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Brian Wainwright 873-7367

Arctic Co-operatives Limited
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Executive Secretary 873-3481 Ext. 112

Eskimo Loan Fund Advisory Board
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Bert Reaburn 873-7516

Highway Transport Board
P.O. Box 697,
Yellowknife
Contact Mr. Dale Thompson 873-7494
873-7495

Labour Standards Board of the Northwest Territories
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Lynda Sorensen 873-8052

Legal Services Board of the Northwest Territories
P.O. Box 1320
Yellowknife, X1A 2L9
Contact W. Douglas Miller 873-7450

Northwest Territories Alcohol and Drug Co-ordinating Council
P.O. Box 1320
Yellowknife X1A 2L9
Contact Winnie Fraser-MacKay 873-7155

Northwest Territories Business Loans and Guarantees Board
P.O. Box 1320
Yellowknife, X1A 2L9
Contact Bert Reaburn 873-7516

Northwest Territories Housing Corporation
P.O. Box 2100
Yellowknife, X1A 2P6
Chairman, Gary Jaeb 873-7850
President, V.G.P. Irving 873-7850
Corporate Secretary, Laurie Harder 873-7852

Finance and Administration Division

Vice-President, Lloyd Clark	873-7897
Comptroller, Emil Homenuik	873-7864
Material Management Manager, Bob Loftus	873-7869
Personnel Administration Manager, Jack Conroy	873-7860

Construction and Development Division

Vice-President, Norman Ridgely	873-7875
Development Manager, Willie Herzog	873-7886
Lands and Sites Manager, Ron McCaw	873-7878

Programs and Planning Division

Vice-President, Hal Logsdon	873-7898
Rental Programs Head, Jalal Toeg	873-7898
Homeownership Programs Head, Jim Fennell	873-7894
Capital Planning Manager, Jim Atkin	873-7858

Northwest Territories Liquor Licensing Board
Hay River, X0E 0R0
Contact Carol Kinsmen 874-2100

Northwest Territories Public Utilities Board
P.O. Box 697,
Yellowknife, X1A 2N5
Contact Dale Thomson 873-7494, 873-7495

Northwest Territories Social Assistance Appeal Board
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Dick Clarke 873-7160

Northwest Territories Water Board
P.O. Box 5000
Yellowknife, X1A 2R3
Contact Jo MacQuarrie 920-8191

Science Advisory Board of the Northwest Territories
P.O. Box 1617
Yellowknife, X1A 2P2
Contact Dan Billing 873-7592

Special Agricultural and Rural Development Act (ARDA) Committee
P.O. Box 1320
Yellowknife, X1A 2L9
Contact Bert Reaburn 873-7516

Teacher Certification Board
P.O. Box 293, Yellowknife
Contact Donna Laing 873-3681

Territorial Hospital Insurance Services Board
P.O. Box 1320,
Yellowknife, X1A 2L9
Contact Edward Timoffee 873-7714

Workers' Compensation Board
P.O. Box 8888
Yellowknife, X1A 2R3

Chairman J.D.C. MacLean	873-7555
Executive Director Bryan C. Roberts	873-7557
Members	
Willie Adams	(819) 925-9927
William Berezowski	476-5037
William Hettrick	873-4803
Arnold Hope	695-2565
Dale Johnston	873-3655
Robert Kuptana	396-3321
John Todd	(819) 645-2949
Mike Zubko	979-3190